

Instructional Guide

67-69 Camaro & 68-74 Nova Torque Arm



10300/11300

Speedtech
PERFORMANCE

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Figure 1 1969 “Hex” Camaro, featured in Chevy Hub Magazine, with ExtReme Torque Arm

Congratulations on the purchase of your new Speedtech Performance Torque Arm Rear Suspension. Installing this system will require the removal of your old suspension and rear axle from the car. Use only approved and appropriately rated jack and jack stands, be sure to take all safety precautions required to do the job safely and correctly. If you are unsure seek the assistance of a highly qualified workshop to assist you

Read and understand all instructions thoroughly before you begin. For the most part, assembly and set up of your new suspension can be done in a home garage with hand tools and basic welding equipment. Included in these tools you will need a quality torque wrench, anti-seize lubricant, red and blue Loctite, and suspension grease. As your final step, review each assembly step again to be sure all fasteners are correctly secured and torqued to specification.

We enjoy seeing the progress our customers are making as they work through their builds so join the Team Speedtech group on Facebook and share your pictures and your story.

From everyone at Speedtech Performance we send you all best wishes for your project!

Installation Guide

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1.0 GENERAL INFORMATION

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1.1 This Guide

The following instructions are intended for professional installers and are guidelines only. Speedtech Performance assumes no responsibility for the installation of any of its products installed by others. All products are intended to be installed by qualified professionals.

NOTE! Some Items pictured may look different then the parts you have in the kit you received. For example, in this guide we have only used pictures of the front cross member for Camaro Coupe, the Nova and Camaro Convertible torque arm receiver cross member will look different. Despite having a slightly different shape the part is functionally the same and is installed in the same manner described.

1.2 Overview

These instructions outline the torque arm rear suspension assembly. The system can be installed independently, or in connection with Speedtech Performance ExtReme or Pro-Touring front subframe. Some photos in the install process may have one of these subframes in them.

NOTE! This kit requires approximately 15 minutes of welding time to install. The upper rear cross member is permanently welded to the unibody. We highly recommend after trimming and fitment of the various components and before welding, that care is taken to protect all surfaces that will be covered by the Speedtech Performance Upper Main Cross Member. A quality weld through primer strategically placed works well. After welding, finish the underside as desired. In some cases, tunnel work also has to take place to allow driveline clearance.

WARNING! Once assembled you will need a professional wheel alignment performed. Driving a vehicle without a proper alignment can be dangerous, towing is recommended to transport the car prior to the alignment being performed.

Before finish welding this guide will take you through a complete mockup of the rear suspension.

While Speedtech's ExtReme suspension systems works great as a direct bolt in replacement for your factory suspension, it is also designed to meet the needs of those intending participate in off highway road racing and autocross competition. To achieve maximum benefit from our system you should anticipate adjusting and tuning of the suspension to achieve optimum performance specific to the vehicle, driver and type of racing. Some of this, such as tuning sway bars and shock settings, can be done track side through making adjustments and seeing/feeling how the car reacts to these changes. We recommend a tire probe pyrometer and good quality air pressure gauge be in your track side tuning kit.

1.3 Torque Arm Rear Suspension Technical Information

| | | |
|-----------------|---|------------------------------------|
| Wheel Clearance | 41in Maximum Frame Width | |
| Coil Overs | 15.3" (JRI) OAL extended with 5 in of travel, 8" Spring | |
| Ride Adjustment | 2in-3in adjustable (JRI Hydraulic Compatible) | |
| Spring Rate | 250lb 2.5in I.D. | |
| Wheel Base | Adjustable $\pm 1/2$ in | |
| Anti-squat | Neutral | |
| Roll Center | 6.5-9in Off Ground | 315/30R18 ($\varnothing 25.5$ in) |

1.4 Torque Arm Rear Suspension Advantages

- Instant reaction to braking and acceleration.
- Eliminates geometry change under braking and acceleration
- More predictable driving with neutral anti-squat
- Greatly improves stability by moving the forces to the center of the car
- Articulating lower arms eliminates binding
- Adjustable roll center

1.5 Additional Considerations

The Speedtech Performance Torque Arm Rear Suspension design may cause some of the current components to no longer be valid on the chassis, these may include:

- Exhaust
- Brake Lines
- Drive shaft (if changing front Sub Frame, Engine and/or Transmission)
- Wheels and lug nuts. All our suspension systems where the wheel bearing is replaced will use a Double roller sealed bearing with stud spacing of 5 on 4.75 and stud threads are 12X1.5mm

1.6 Tools

Installation of the Speedtech Performance Rear Torque Arm Suspension can be done on the floor with simple hand tools and no special tools are required.

Additional things to have before you start:

- Weld through primer
- Loctite Red
- Antiseize
- Floor jack & stands
- Torque Wrench

2.0 CHECK IN PARTS AND HARDWARE

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2.1 Checking in the Order

Best practice will be to check in your order as soon as possible after receiving the order. To check in the order we have provided tables, these can be used as check lists for your order. If you discover anything missing from your order call your authorized dealer as soon as possible.

2.2 Check in Tables

TORQUE ARM

| X | # | Description | Size |
|---|---|---------------------------------|------------------|
| | 1 | Torque Arm | Welded Arm |
| | 1 | Torque Arm Bow Tie | 1/4" Plate |
| | 1 | Torque Arm Pin Bushing | Delrin (Plastic) |
| | 1 | Pin Bushing Bolt | 3/8" x 3/4" |
| | 1 | Pin Bushing USS Plate Washer | 3/8" |
| | 1 | Pin Bushing Lock Washer | 3/8" |
| | 2 | Axle Housing Collar Bushing | Delrin (Plastic) |
| | 1 | Axle Housing Collar Bolt Sleeve | 9/16" ID |
| | 1 | Axle Housing Bolt | 9/16" x 3-1/4" |
| | 1 | Axle Housing Stover Lock Nut | 9/16" |
| | 2 | Axle Housing Washer | 9/16" |

SHOCKS

| | | | |
|--|---|----------------------------|---------------|
| | 2 | Upper Shock Hex Bolts | 1/2" x 2-1/2" |
| | 2 | Upper Shock Mount Nylocks | 1/2" |
| | 2 | Upper Shock Mount Washers | 1/2" |
| | 2 | Lower Shock Mount Standoff | Aluminum |
| | 2 | Lower Shock Short Bolts | 5/8" x 1" |
| | 2 | Lower Shock Hex Bolts | 5/8" x 3-1/2" |
| | 2 | Lower Shock Nylocks | 5/8" |
| | 4 | Lower Shock Mount Washers | 5/8" |

PANHARD BAR

| | | | |
|--|---|--------------------------------|---------------|
| | 1 | Pan Hard Bar | 29-1/2" Long |
| | 1 | Left Hand Rod End | 5/8" LHT |
| | 1 | Right Hand Rod End | 5/8" RHT |
| | 1 | Left Hand Jam Nut | 5/8" LHT |
| | 1 | Right Hand Jam Nut | 5/8" RHT |
| | 2 | Panhard Bar Mount Bolts | 1/2" x 2-1/2" |
| | 2 | Panhard Bar Mount Nylocks Nuts | 1/2" |
| | 4 | Panhard Bar Mount Washers | 1/2" |

LOWER ARTICULINK CONTROL ARMS

| | | | |
|--|---|--------------------------------------|--------------------|
| | 2 | Articulink Trailing Arms (Assembled) | 24-1/2" Eye to Eye |
| | 2 | Axle Mounting Bolts | 1/2" x 3-1/2" |

| | | | |
|--|---|-------------------------------------|---------------|
| | 2 | Axle Mounting Nylocks Nuts | 1/2" |
| | 2 | Axle Mounting Washers | 1/2" |
| | 2 | Spring Pocket Mounting Bolts | 1/2" x 4-1/2" |
| | 2 | Spring Pocket Mounting Nylocks Nuts | 1/2" |
| | 2 | Spring Pocket Mounting Washers | 1/2" |
| | 2 | Spring Pocket Mounting Spacer | Plastic Puck |

TORQUE ARM FRONT CROSSMEMBER

| | | | |
|--|---|----------------------------|---------------|
| | 1 | Crossmember Box Frame | Welded Arm |
| | 2 | Solid Body Mounts | Aluminum Puck |
| | 2 | Solid Body Mount Cups | Aluminum Cups |
| | 2 | Body Mount Bolts | 5/8" x 3-1/2" |
| | 2 | Body Mount Washers (Large) | 5/8" |
| | 2 | Body Mount Lock Washers | 5/8" |

TORQUE ARM REAR CROSSMEMBER

| | | | |
|--|----|---|-----------------|
| | 1 | Crossmember Frame | Welded |
| | 2 | Crossmember Frame Rail Brace (Mirrored) | Bent Plate |
| | 2 | Crossmember Frame Trunk Plates | Rectangle Plate |
| | 2 | Crossmember Spacer Plates | Small Rectangle |
| | 4 | Through Floor Sandwich Bolts Long | 3/8" x 2" |
| | 4 | Through Floor Sandwich Bolts Short | 3/8" x 1-1/4" |
| | 16 | Sandwich Plate Washers | 3/8" |
| | 8 | Sandwich Plate Nylocks | 3/8" |

SPRING POCKET ADDITIONAL BOLTS

| | | | |
|--|----|-----------------------|------------------|
| | 10 | Spring Pocket Bolts | 3/8" x 1-1/4" NC |
| | 14 | Spring Pocket Washers | 3/8" |
| | 4 | Spring Pocket Nylocks | 3/8" NC |

OPTIONAL CONVERTIBLE FRONT CROSSMEMBER

| | | | |
|--|---|---------------------------------|------------------|
| | 4 | Crossmember Bridge Bolts | 3/8" x 1-1/4" NC |
| | 4 | Crossmember Bridge Laga Washers | 3/8" |

One of the following kits will be included**FORD 9in PINION MOUNT**

| | | | |
|--|---|-------------------------|---------------|
| | 1 | Pinion Mount | Billet |
| | 5 | Pinion Mount Bolts | 3/8" x 2-1/4" |
| | 5 | Pinion Mount Washers | 3/8" |
| | 2 | Torque Arm Bolts | 1/2" x 2 |
| | 2 | Torque Arm Lock Washers | 1/2" |
| | 2 | Torque Arm Washers | 1/2" |

GM 10 or 12 BOLT MOUNT

| | | | |
|--|---|--------------------------|----------|
| | 1 | 10 Bolt or 12 Bolt Ring | Welded |
| | 1 | Pinion Snout Clamp Lower | Billet |
| | 1 | Pinion Snout Clamp Upper | Billet |
| | 2 | Torque Arm Bolts | 1/2" x 2 |

| | | |
|---|-------------------------|----------------|
| 2 | Torque Arm Lock Washers | 1/2" |
| 2 | Torque Arm Washers | 1/2" |
| 2 | Clamp Bolts | 1/2" x 2" SHCS |

3.0 GETTING STARTED

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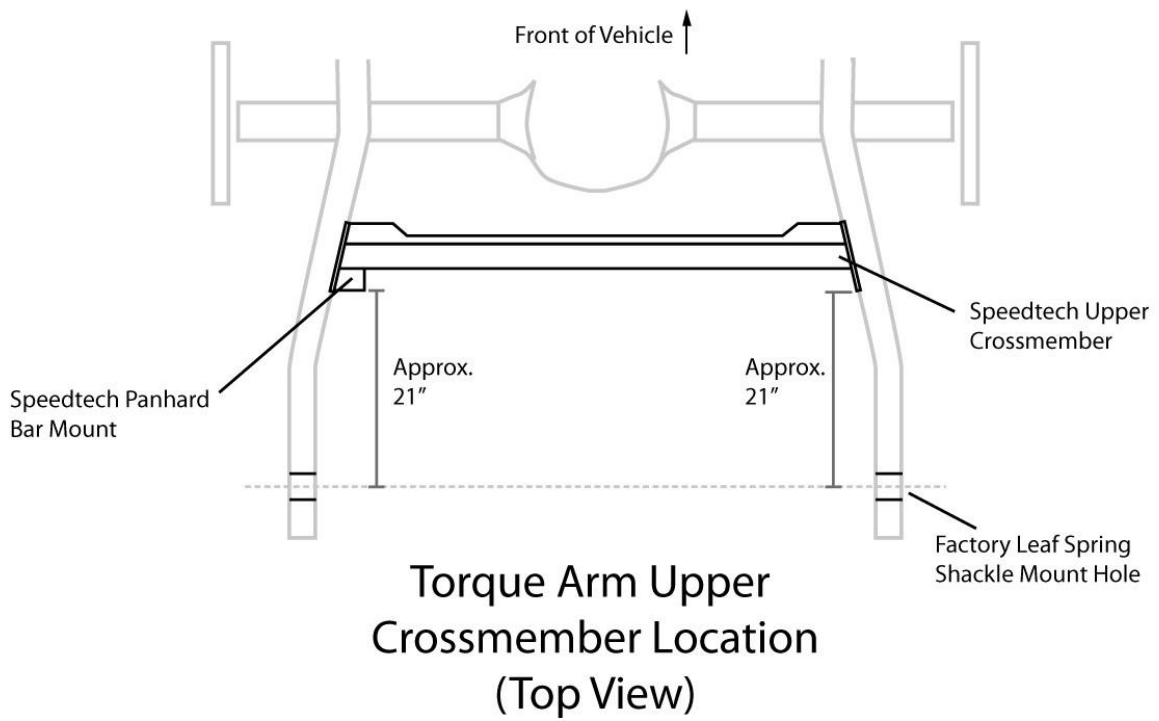
3.1 Prepare

- Unpack all the components and organize them on a table with their accompanying hardware. Use the check list above.
- Level the car above a smooth work surface.
- Disassemble the rear of the car. Removing exhaust, driveshaft, axle, suspension, and fuel tank and all fluid lines.
- Prepare the inside of the car and the trunk area for welding on the bottom side for the car as well as installation of the sandwich plates and Spring Pockets.
- Dry fit the rear crossmember Side Reinforcement Plates, lining the hole up with the bump stop mount, on the inside and bottom of the frame rail.

3.2 Tack Weld Upper Main Cross Member

Put the side reinforcement plates on place and hold them in place with a clamp being careful not to crush the unibody frame rail. Lift the rear cross member up and hold it tight to the side reinforcement plates, centering the cross member in the chassis. The rear edge of the cross member should be approximately 21" from the original leaf spring shackle mount center line. See diagram below. Another indication of good positioning is the sandwich plate will touch the truck pan at the top of the sandwich plate welded to the cross member. There will be up to a 1/4" gap between the cross member and the side plates/ frame rails. This is normal and is intended to accommodate variances in the factory assembly. Mark the position of the crossmember.

NOTE! There is always a chance the car you are working on has had previous collision damages repaired, corrosion repaired, and floor or trunk pans replaced. Any of these repairs and other repairs or modifications could effect the fitment of the cross member and create a tighter fit or wider gap between the cross member and side reinforcement plates

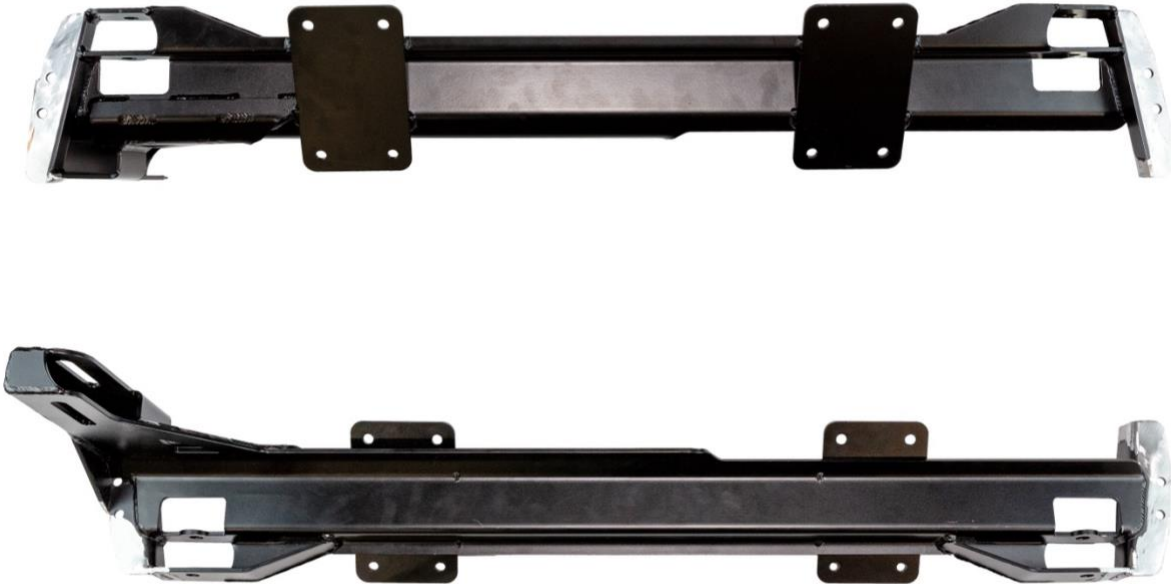


- Mark the rail, tracing the plates and the area they cover up.

- Clear all the paint and coating inside the marked area, exposing the raw metal on the frame rail.
- Use Weld Through Primer where appropriate and weld the Side Reinforcement Plates.



- Prepare surfaces where the new Upper Main Cross Member will be welded to the chassis side reinforcement plates.
- Clean the edges of the powder coated Main Upper Cross Member where it will be welded to the chassis.



- Check fitment if the cross member and it's position in the chassis, Another indication of good positioning is the sandwich plate will touch the trunk pan at the top of the sandwich plate welded to the cross member.



- When you are happy with the position of the cross member in the chassis tack it to the Side reinforcement plates. The tack welds should be substantial enough to support the rest of the mockup process.

4.0 PREPARE REAR AXLE

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4.1 Rear Axle

The majority of Speedtech Performance clients who order our Torque Arm Rear Suspension will at the same time order a new Ford 9" axle housing. If, like many of our clients you have ordered a new 9" housing for your project it will already have all the needed brackets on it and you can skip this section. If you did not order a new prebuilt rear end housing you will need to modify your existing axle housing. The required modifications include cutting off existing brackets and welding on brackets that came in your parts kit for both a 9" and a positraction housing. Welding on the housing can cause distortion that will need to be corrected. Special tools are needed to check the housing after being subjected to intense heat to be sure it is straight and true before reassembly.

4.2 Axle Disassembly and Preparation

Strip the Axle down to a bare housing and remove any brackets that will interfere with the new Articulink, shock and Panhard bar brackets.

Note: Speedtech offers support for GM 10 and 12 bolt housings, and Ford 9" housings. Follow the corresponding instructions below that match the build you are doing.

Speedtech offers new Ford 9" housings with the brackets pre welded for each application.

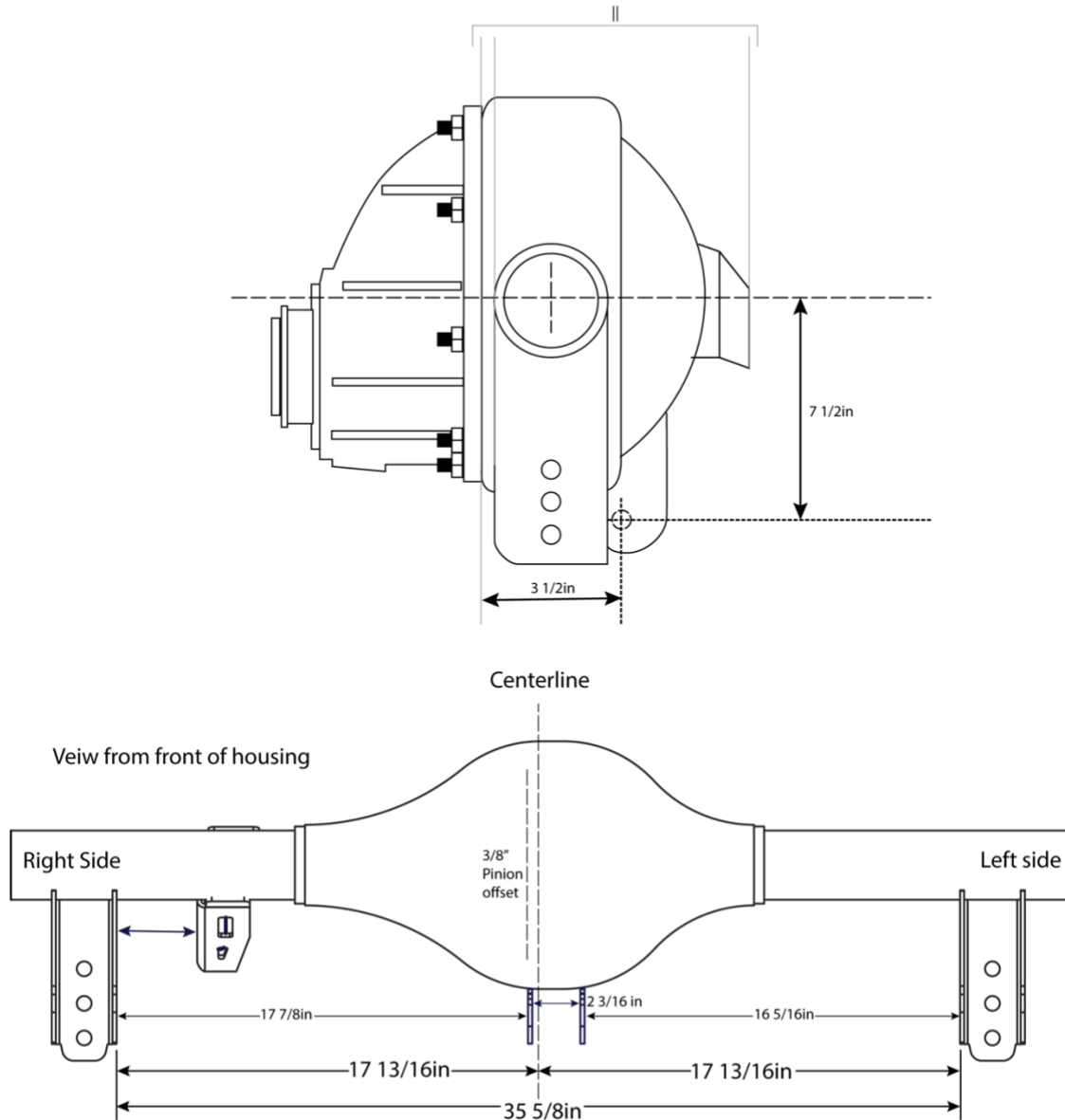
Note: Welding will cause axle tube warpage of some degree. Be sure to verify straightness of housing before assembling the complete rear. If you don't have the proper tools or are unsure how to do this seek out professional help.

4.2.1 Ford 9"

Weld additional brackets to your rear axle housing according to the diagram on the next page. Note- welding will cause axle tube warpage of some degree. Be sure to verify straightness of housing before assembling the complete rear. If you don't have the proper tools or are unsure how to do this seek out professional help. If you order an axle from Speedtech, these brackets will all be pre welded in place.



Torque Arm Rear Suspension rear axle housing build layup 67-69 Camaro & 68-74 Nova



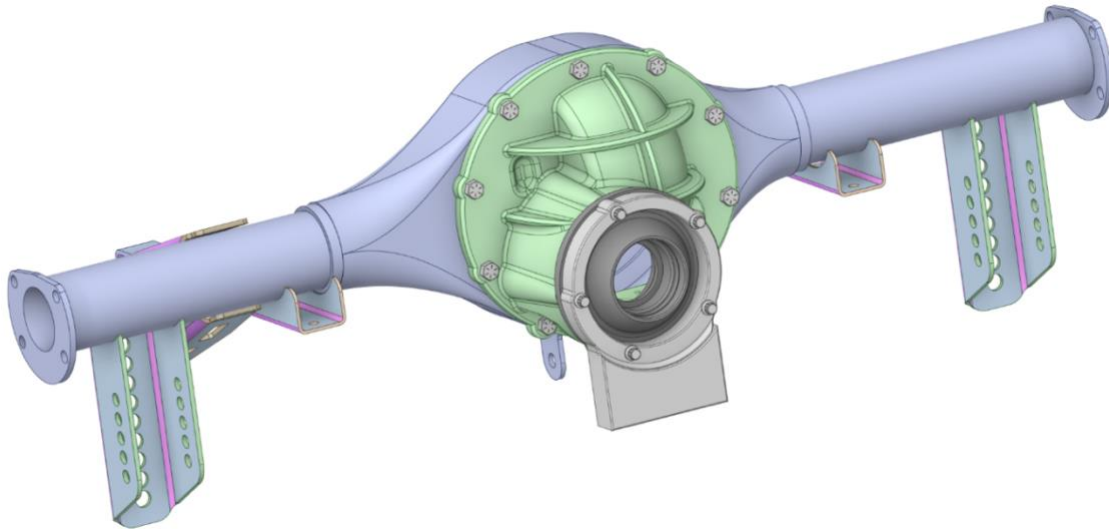
Speedtech Performance has designed our system for a Pinion Offset of 3/8" and can accommodate up to 5/8" Pinion Offset

Camaro 67-69 & Nova 68-74

After welding is complete and the housing has cooled check the axle is straight and true. If you are unsure how to do this seek professional assistance.

Refinish housing to your specification being sure to protect welds and housing from corrosion.

Note: The pinion mount is a straight bolt-on over the existing pinion support. **IMPORTANT!** This bracket is designed to work with the original Ford pinion mount clocking position. Some aftermarket 9in centers have non-Ford clocking. Non-Ford pinion mount clocking will not work. Please verify that your center is correct. If you are not sure, please contact your axle manufacturer before beginning the installation.



- Remove all the original pinion support bolts.
- Bolt on the billet pinion mount using the new bolts.
- **IMPORTANT!** Torque bolts to 55 ft.lb.

Note: Speedtech supports two different 3rd members. Standard steel and the more advanced billet center section. The bolts and pinion support shape for these two members are different. Verify that the pinion mount kit matches the rear-end housing. If you have ordered the aluminum center section with the through bolts in the case they are a heavy duty unit and the pinion support mounting studs are 7/16" instead of the standard 3/8" bolts. We will provide special length studs for this center that will work with the Speedtech Torque arm pinion mount. You will have to drill out the 5 mounting holes in the Speedtech pinion mount to fit the 7/16 studs. This can be done carefully with a hand drill but would be better done on a drill press.

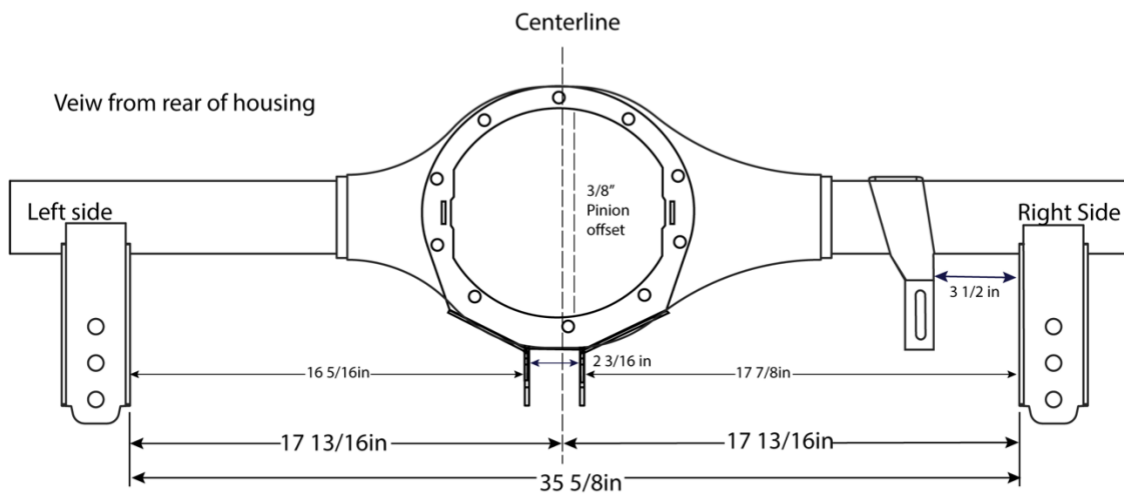


4.2.2 10 and 12 bolt Positraction

The diagram below shows a generic rear end housing as viewed from the rear. The rear torque arm pivot mount tabs are not weld on, they are integrated into a ring that is sandwiched between the rear end and the differential cover. The tabs are not centered, and you need to be sure it is installed correctly.



Torque Arm Rear Suspension rear axle housing build layup 67-69 Camaro & 68-74 Nova



Speedtech Performance has designed our system for a Pinion Offset of 3/8" and can accommodate up to 5/8" Pinion Offset

Camaro 67-69 & Nova 68-74

After welding is complete and the housing has cooled check the axle is straight and true. If you are unsure how to do this seek professional assistance.

Test fit the ring with the pivot mount brackets before putting the rear end together. If required clearance casting flash from the housing to ensure a tight fit. Do this by dry fitting the ring, mark the interference areas, then grind the flash off the housing.

Assemble the rear end per the manufactures recommended process, before installing the rear cover, install the ring with the pivot mount brackets

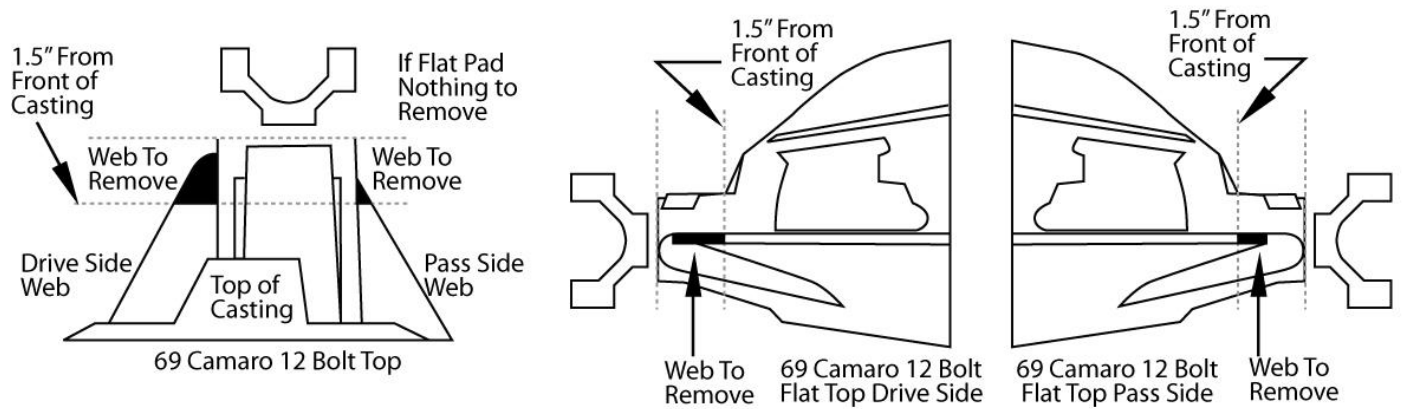
Clean the sealing surface and apply a bead of silicone. Set the mounting ring in place, apply an additional silicone bead on the mounting ring surface, now install the cover on top of the ring.

Ensure bolts are long enough to take torque and not damage threads. Torque to manufacture's specs, otherwise 20 ft.lb.

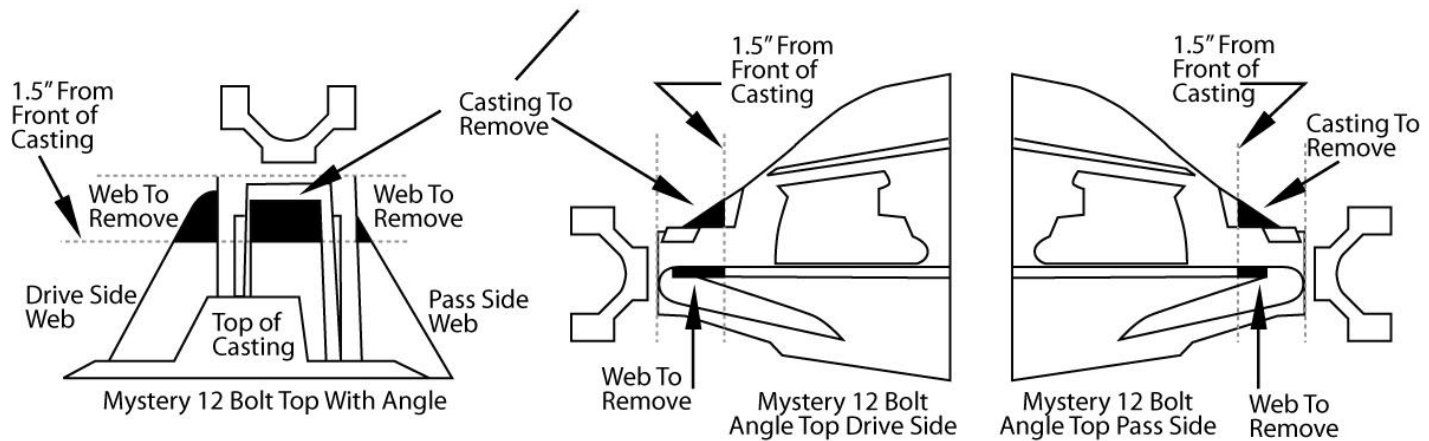


Install the billet aluminum pinion clamp. Every pinion snout casting is unique and will have to be modified to fit. Dry fit the billet clamp onto the pinion mount, mark interference areas. (Refer to diagram below)

Please study these diagrams carefully. You will need to trim your 12 bolt housing to properly fit the pinion mount.

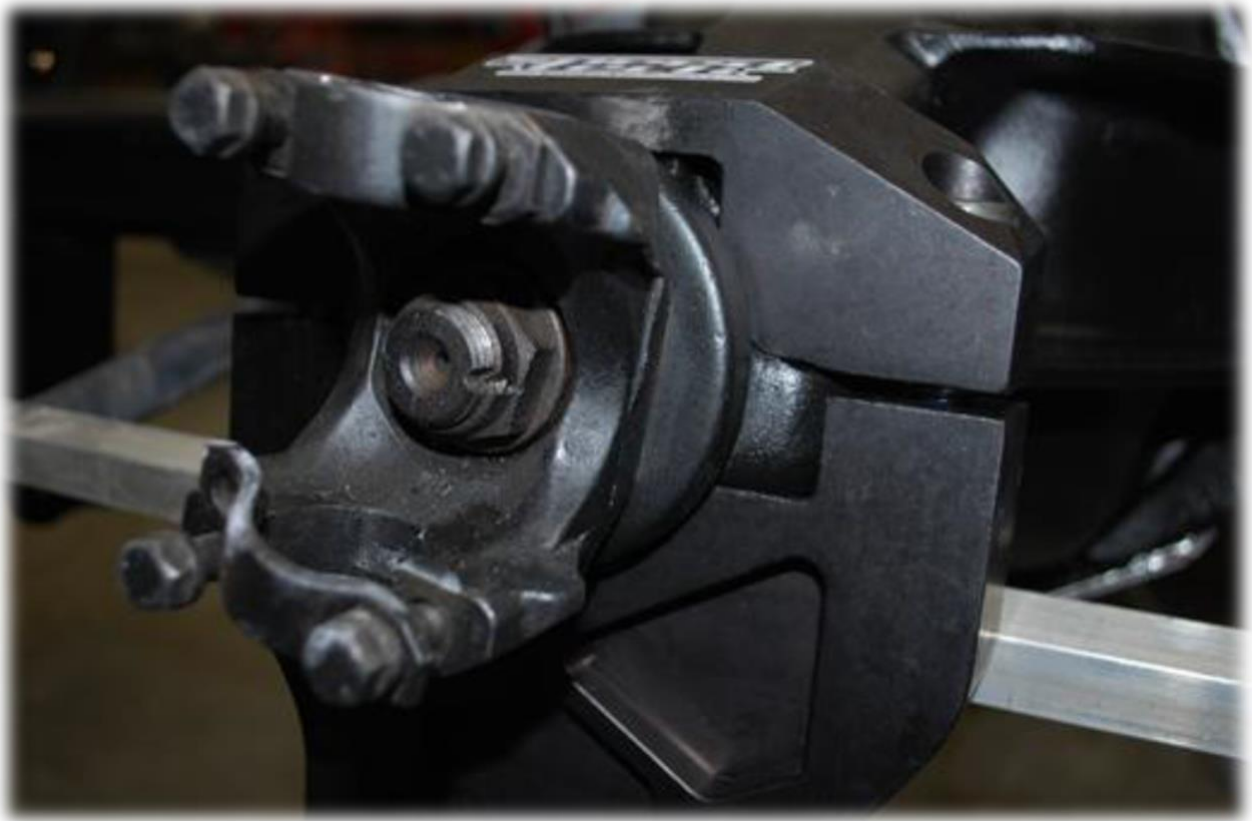


**** Be cautious to note where factory pinion bearing oil passage is when grinding!**



Cut and grind pinion snout to fit billet pinion clamp.
IMPORTANT! Keep in mind factory pinion bearing oil passage.
 Protect the now exposed cast to prevent rust.
 Bolt on the billet aluminum pinion clamp using the (2) SHCS.
IMPORTANT! On final assembly, Use red Loctite; torque to 90 ft.lb.
IMPORTANT! Retorque after the first 500 miles.

Note: Some 10 Bolt axle housings will require that the billet pinion mount also be slightly modified to fit the pinion snout. Use your discretion for your application.



4.3 Manufacture Instructions

Follow all 3rd party instruction on assembling the 3rd member (ford), gearing, axle, pinion, and seals.

Use the brake manufactures instructions to Install the brake components and center caliper over the rotor.

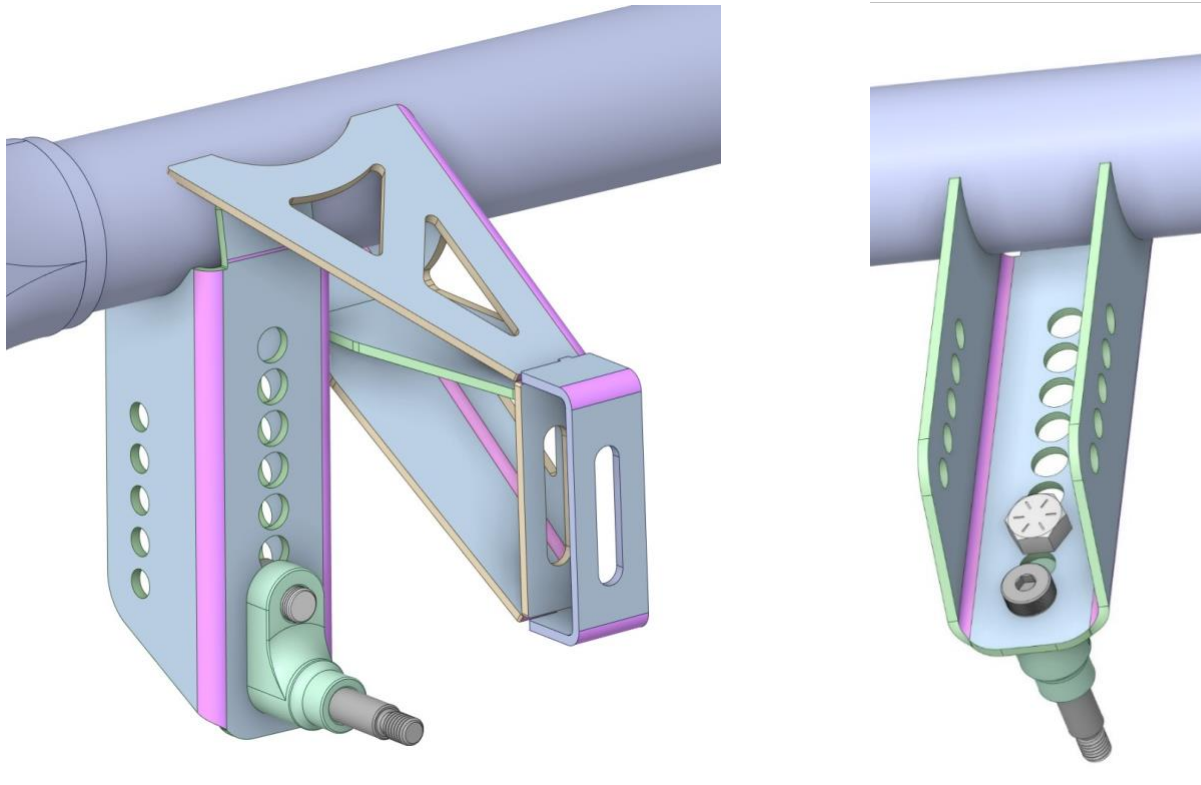
4.4 Lower Shock Mount

Note: The lower shock mount location is adjustable to accommodate many different ride heights, wheel sizes, and shock options. Measure and set the standoff location unique to your build on final assembly.

- Locate the billet shock mount standoffs, (2) 5/8" short bolts and washers.
- Bolt the standoffs onto the back side of the shock extenders. Use the 5/8" shoulder bolt to keep the second hole aligned.
- The standoffs can be oriented either way to match your shock length and desired ride height. Ride height can be checked during the mock up.

A good starting point for the Camaro is have the shoulder bolt come through the bottom hole. The shoulder bolt will be installed when the shock is installed.

IMPORTANT! On final assembly, use Red Loctite; torque to 120 ft.lb.

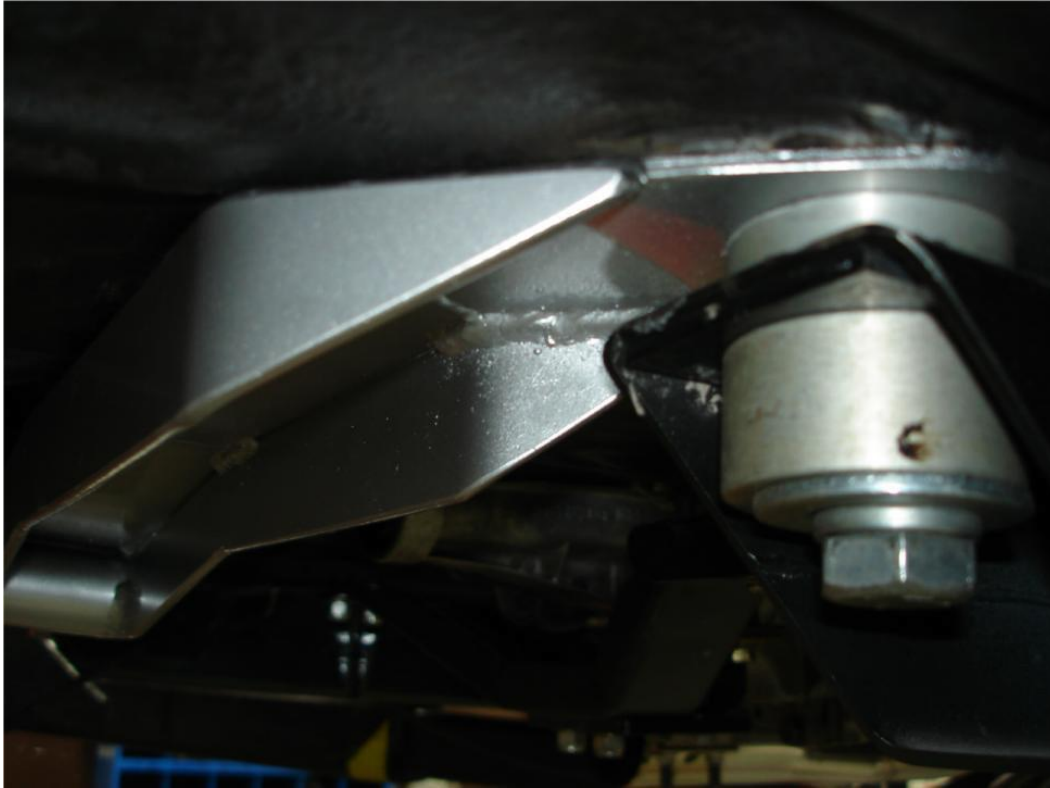


5.0 FRONT TORQUE ARM RECEIVER CROSS MEMBER

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5.1 Overview

The front cross member for the torque arm is mounted tight to the floor above the body mounts. Provided in the kit are solid body mounts for this location that are 3/16" shorter to ensure that your sub frame remains in the original position. The mounting holes in the cross member are slotted to allow for adjustment of the mount.



5.2 Installing

Support the front of the sub frame on jack stands and remove the bolts for the rear sub frame / body mounts. Slip the Torque arm mounting cross member in between the floor and the top of the new body mount. Make sure the cross member tabs are pointing forward. Reinstall the bolts. Torque to 160 ft lbs.

6.0 ARTICULINKS AND FRONT SPRING POCKETS

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6.1 Prepare Front Spring Pocket

Drill two 3/8" holes near the "C" cutout. Refer to the picture below. These holes will be used in addition to the stock holes for a stronger connection with the car. Later in the process you'll pull up the carpet to avoid damaging it before transferring the holes to the chassis.



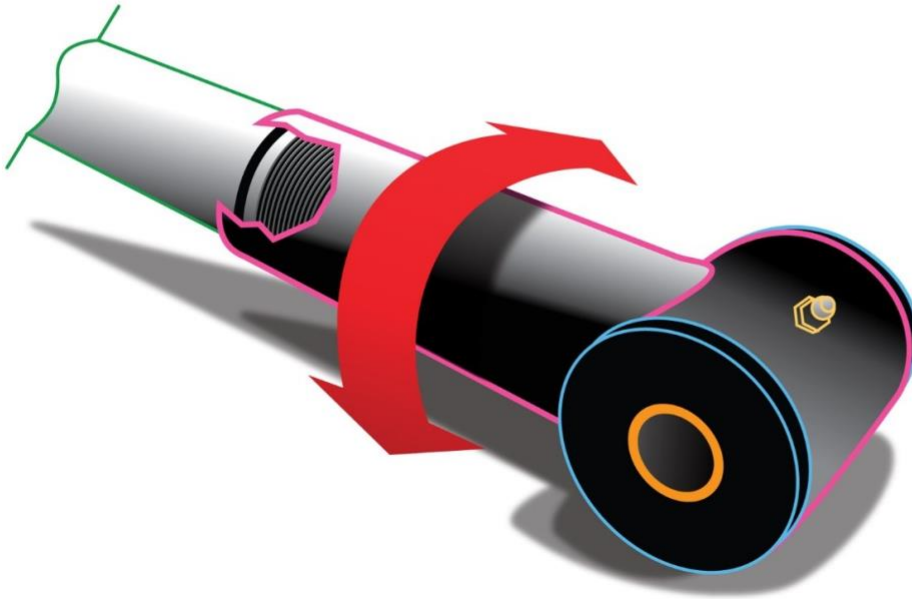
6.1.1 Install Articlinks in to the Spring Pockets

Prepare the lower articlink arms.



Set the arm's length by screwing in or out the two halves to 24-1/2" collar center to center (26-1/2" end to end)

Speedtech Performance's exclusive Articulink design is adjustable to help center wheels in the wheel openings. Simply rotate short end left or right to adjust.



When installing the Articulinks ensure both grease zerks tips are oriented down.



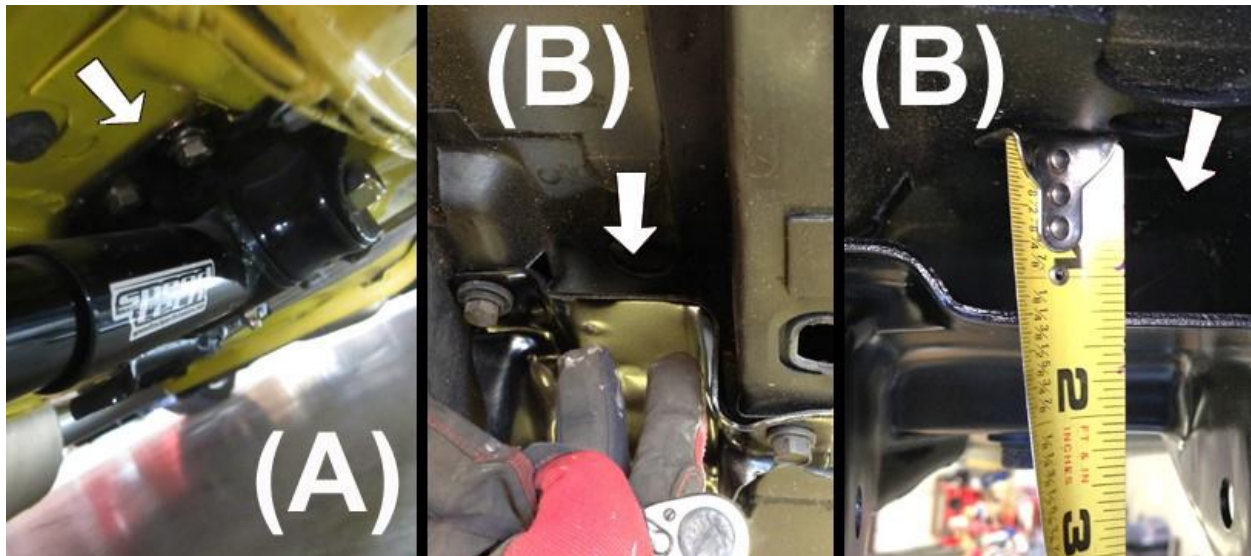
NOTE the bolt sleeves and bushings will already be installed in the Articulink when you receive them. Locate the $\frac{1}{2}$ "x 4.5" bolts, $\frac{1}{2}$ " Nylock nuts and the black Delrin spacer, install the articulink lower trailing arms into the leaf spring pockets with the small sticker indicating D (driver) or P (passenger) at the front. Do Not completely tighten the bolts at this time as they use Nylock lock nuts and you will be removing them again later in the installation. The spacers should be installed towards the outside of the car and grease fittings should point downward. Install the spring pocket and trailing arm assemblies back into the car and snug the bolts. Later you will torque the $\frac{1}{2}$ " bolt to 90 lbs., the spring pocket factory bolts to 35 lbs, and the two additional $\frac{3}{8}$ " bolts you'll add to the spring pockets to 40 lbs.

Pictured below is the final spring pocket and trailing arm assembly. Note that the articulating portion of the trailing arm is towards the front, and the spacer is towards the outside of the car.



6.2 Install the Spring Pockets

Note: Nova and X bodies came from the factory with two different front leaf spring pockets. Some fit snug to the floor (A), and most have a gap between the pocket and the floor (B). If you have type (B) then you will need to purchase style (A) '67-69 Camaro front leaf spring pockets, part numbers 389751 (left) and 389752 (right).



7.0 ASSEMBLE TORQUE ARM

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.1 Delrin Bushings

Before we can load the system to the chassis for mockup we want to assemble the torque arm. Locate and install the Torque Arm Delrin bushing on the front pin. Apply blue Loctite on the 3/8 bolt, bolt the front pin bushing using a flat washer, and the lock washer. Torque to 40 ft.lb.



Assemble the rear pivot collar bushings and sleeve in the torque arm. You will be able to tap these into position with a mallet. The sleeve will slightly stand proud to the two Delrin bushings.



8.0 MOCKUP

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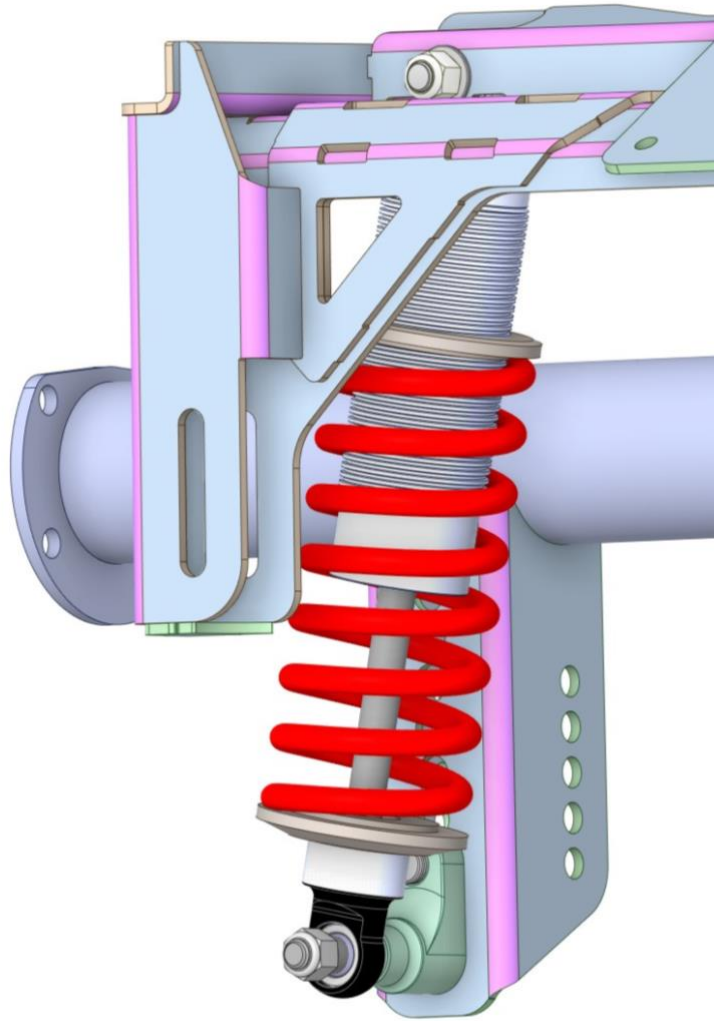
8.1 Installation

Note: For the mockup you may find it is easier to take the springs off the coil overs so you can articulate the rear axle to ride height as well as move it through it's range of travel to check clearance.

Note: General guidance on shock installation is superseded by information provided by the shock manufacture.

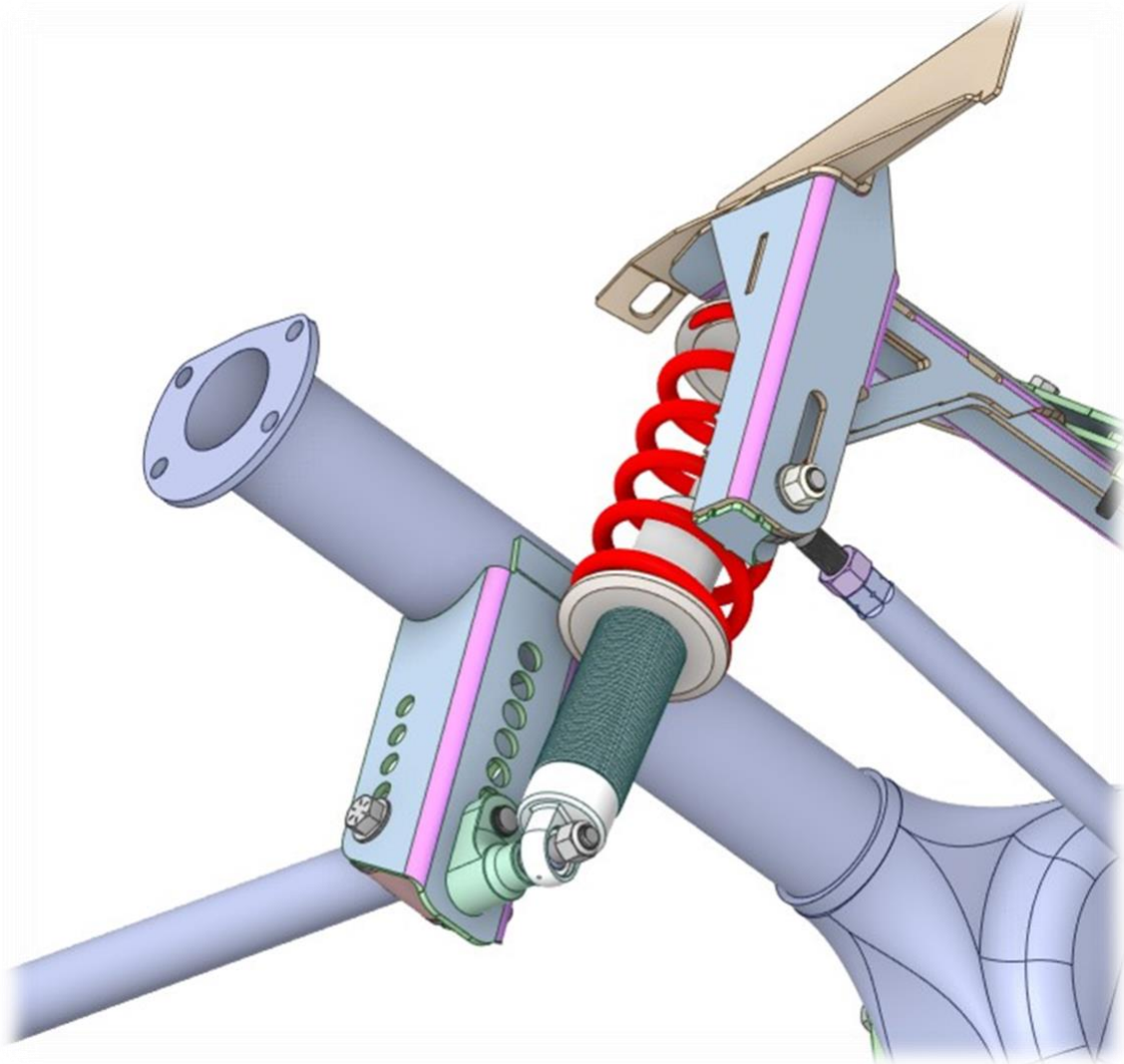
8.1.1 Attach Upper Shock Mount

Hang the shock from the Upper Main Cross Member, during mockup is not necessary to torque the fasteners but you should at least use the nut to ensure the bolt cannot fall out.



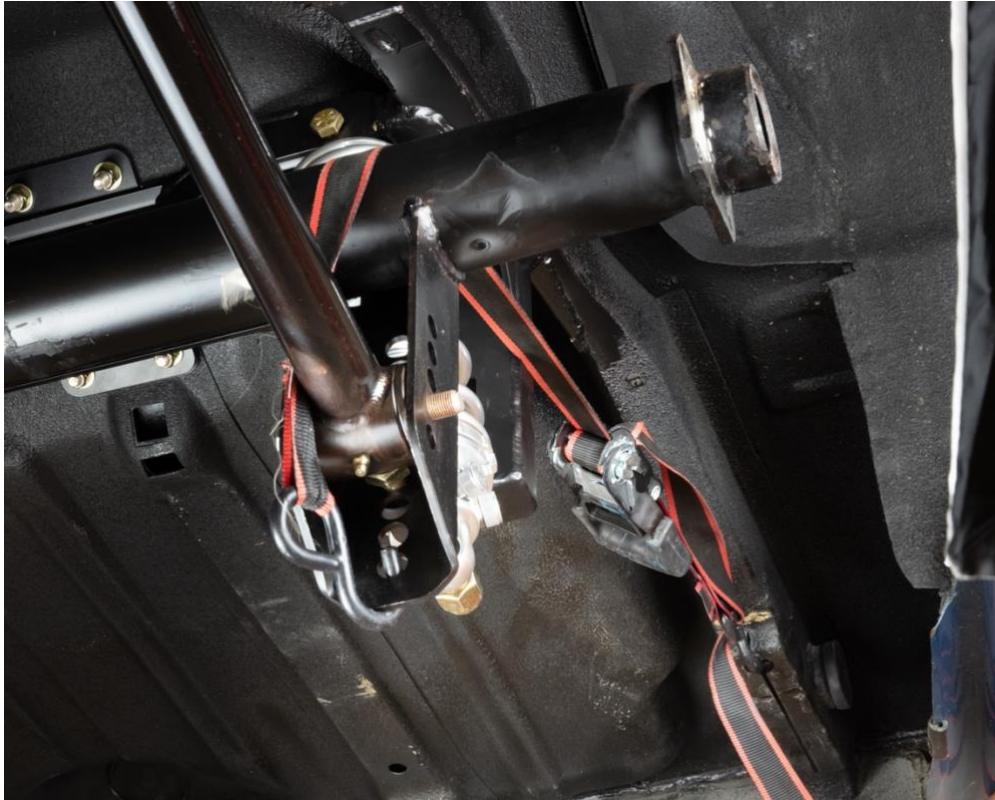
8.1.2 Attach Lower Shock Mount

Lift the assembled axle into position, securing it on jack stands at the approximate height. Bolt the shock to the installed lower standoffs using the (2) 5/8" x 3-1/2" bolts, nylocks. Slide in the bolt from bracket on the rear end into the shock standoff and into the lower shock mount. Hold everything in place using the bolt and nylock nut. Repeat for the other side.

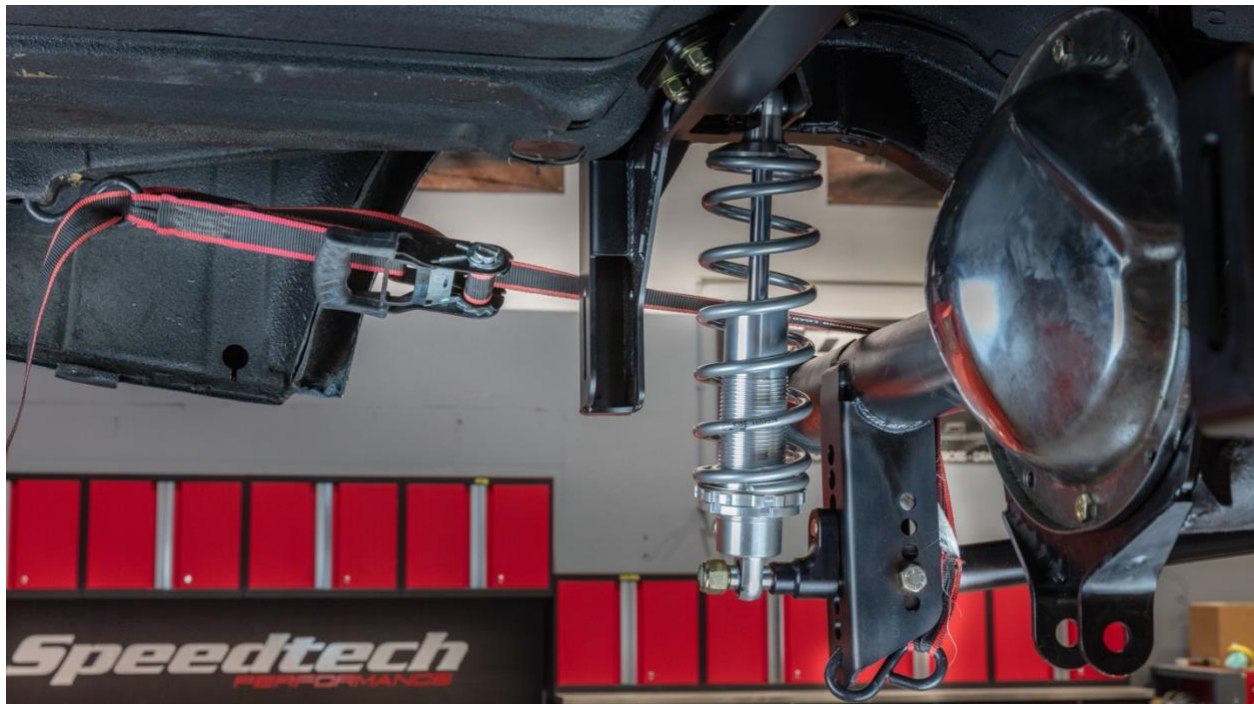


8.1.3 Attach Articlink to Rear End

Bolt the rear of the Articlink arms to the axle lower bracket. Make any minor adjustments to the spring pockets so there is not any preload in the lower arm and can easily swing in and out of the bracket. Loosely bolt in place. On final assembly use antiseize, torque to 90 ft.lb.



It may be helpful to use a ratchet strap anchored at the rear of the chassis to hold the rear axle from rotating forward as you lower the jack.

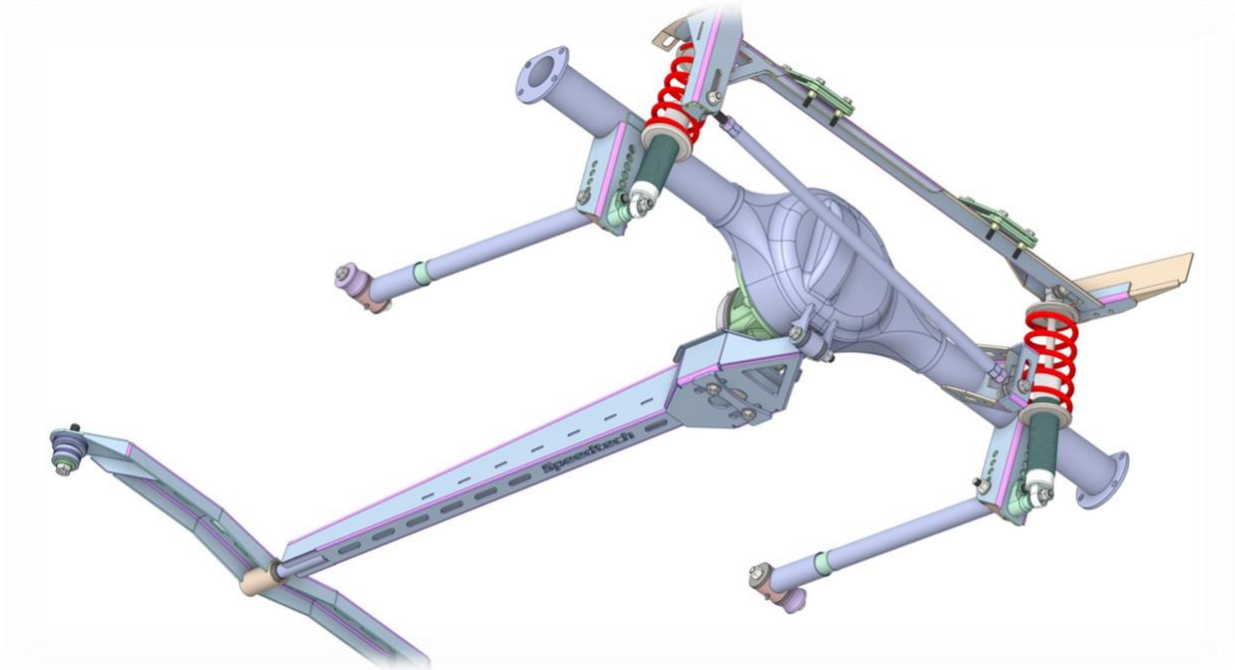


8.1.4 Install Torque Arm

Install the previously assembled torque arm.

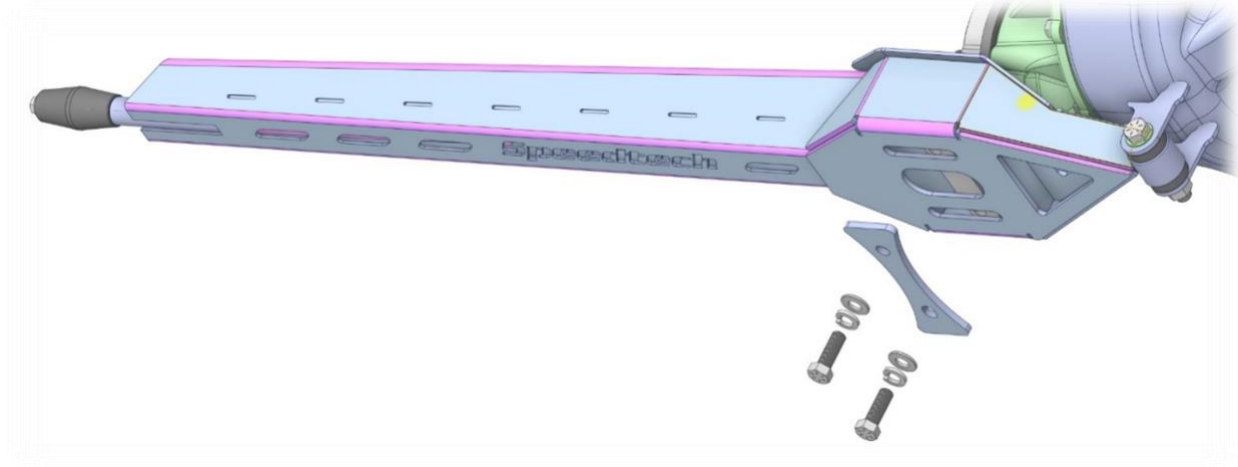
Insert the front of the torque arm with pin bushing into the front cross member receiver.

You may want to install the drive shaft before the torque arm is installed to ensure good clearance around it, and drive shaft angle relative to the transmission output shaft and pinion angle. This is covered in greater detail below and is not required until final assembly.



Lift the rear of the torque arm up into the torque arm pivot and push the bolt through.

Loosen the ratchet stop holding up the front of the rear end. Install the two bolts with bow tie to secure the pinion mount to the torque arm.



8.1.5 Install Pan-Hard Bar

Assemble the pan-hard bar.

- Apply anti-seize onto the heim joint threads.
- Thread the jam nuts onto the heim joints.
- Install the heim joints onto the pan hard bar. Making sure that the heims have equal engagement into the bar.

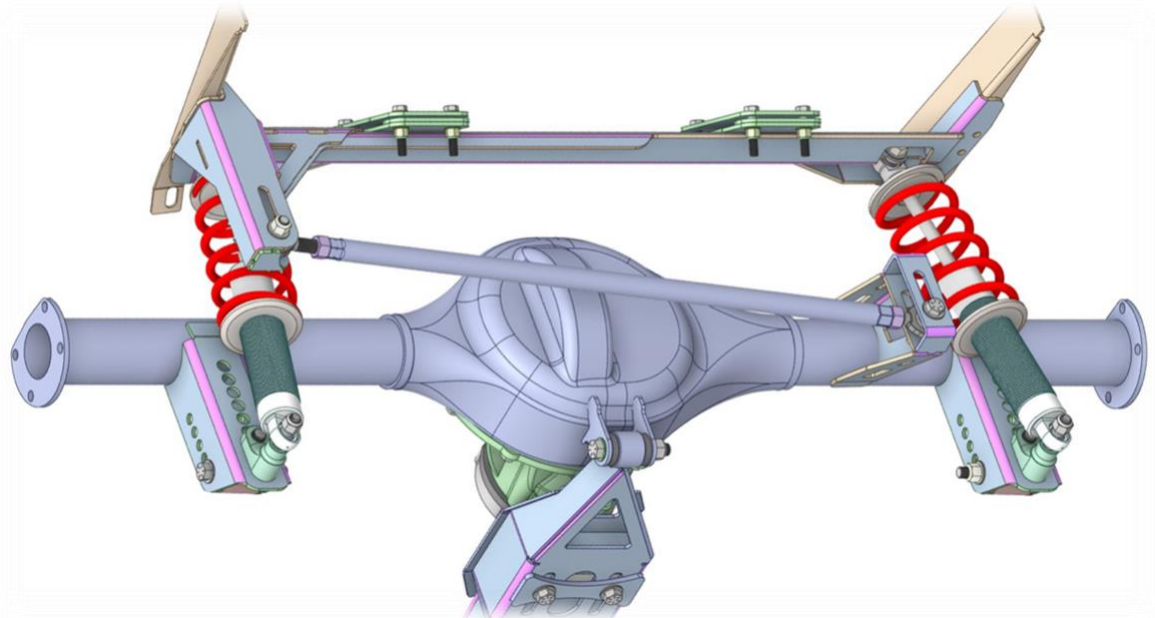
Install the pan-hard bar onto the car using (2) 1/2" x 2-1/2" bolts, nylocks, and (4) washers.

Bolt the pan-hard bar into the slot on the frame and the slot on the prepared axle.

The heim fits inside the two slots. The Bar should be level at ride height. Use the washers on the outside of both slots.

On final assembly, torque to 90 ft.lb.

Center the axle inside the frame by taking measurements between the rotor and the frame. Spin the pan-hard bar, lengthening or shortening the bar assembly as needed to center the axle. Tighten the jam nuts.



Note: The axle centering will have to be measured again during the final alignment of the car. The finished weight needs to be sitting on the frame for an accurate alignment. Details are described under the finalization section.

8.2 Final Checks During Mockup

Note: Now that all the components are mocked up into the car, general measurements can be made to ensure alignments and wheel placement is satisfactory. Make any minor adjustments to the attachment components as needed. Final alignment will be done after the components are welded and the weight of the car is on the system.

While the system is mocked up you can check for:

- Tighten all loose bolts snugly so there is no slop in the between the components
- Set up your lower shock mounting position to target shock travel being centered at ride height
- It will be ideal to set up the Articulinke to be level at ride height
- It will be ideal to set up the Pan-Hard to be level at ride height
- Measure and check fitment of all components
- Check that there is proper clearance for all the suspension components.
- Make sure they will not hit each other throughout the motion of the system
- Fit the wheels on the axle and check the location of the wheel in the wheel well
- Make sure it is centered and even from front to back



- Measure that the rear axle is square with the front axle.
- Check that there is no side load on the Articulinks
 - Unbolt them one side at a time and see if they easily swing out and back into their locations.
- Check the heights of all the key areas that they are all level side to side.
- If you discover any issues that require moving the Upper Main Cross Member to address you will have to cut your tack welds and reposition it and mockup the system again

Without disturbing the position of the front spring pockets torque the three factory bolts for the front spring pockets.

8.4 Torque Arm Front Mount

There is some adjustment available in the front Torque Arm Receiver Cross Member. With the rear subframe bolts loose you can maneuver the crossmember to optimize alignment with the torque arm. When the position is such that there is no preload on the Torque Arm torque the sub frame rear bolts to 160 ft lbs.

8.4 Disassemble Mockup

With all checks completed you can now disassemble the system and remove it from the chassis. Remember the rear axles will probably want to roll forward after the torque arm is removed so you will want to secure as you for mockup.

8.5 Install Front Spring Pockets

With the front spring pockets in position and the Articulinks hanging down you can now take out the rear seat bottom and lift up the rear carpet and anything else that could potentially be damaged when making the two new additional holes in the chassis for the front spring pocket. Now drill the holes in the floor using the holes you previously put in the front spring pockets as a guide for the location of the where to drill.

Install a nut and bolt in each of the 4 new holes and torque to

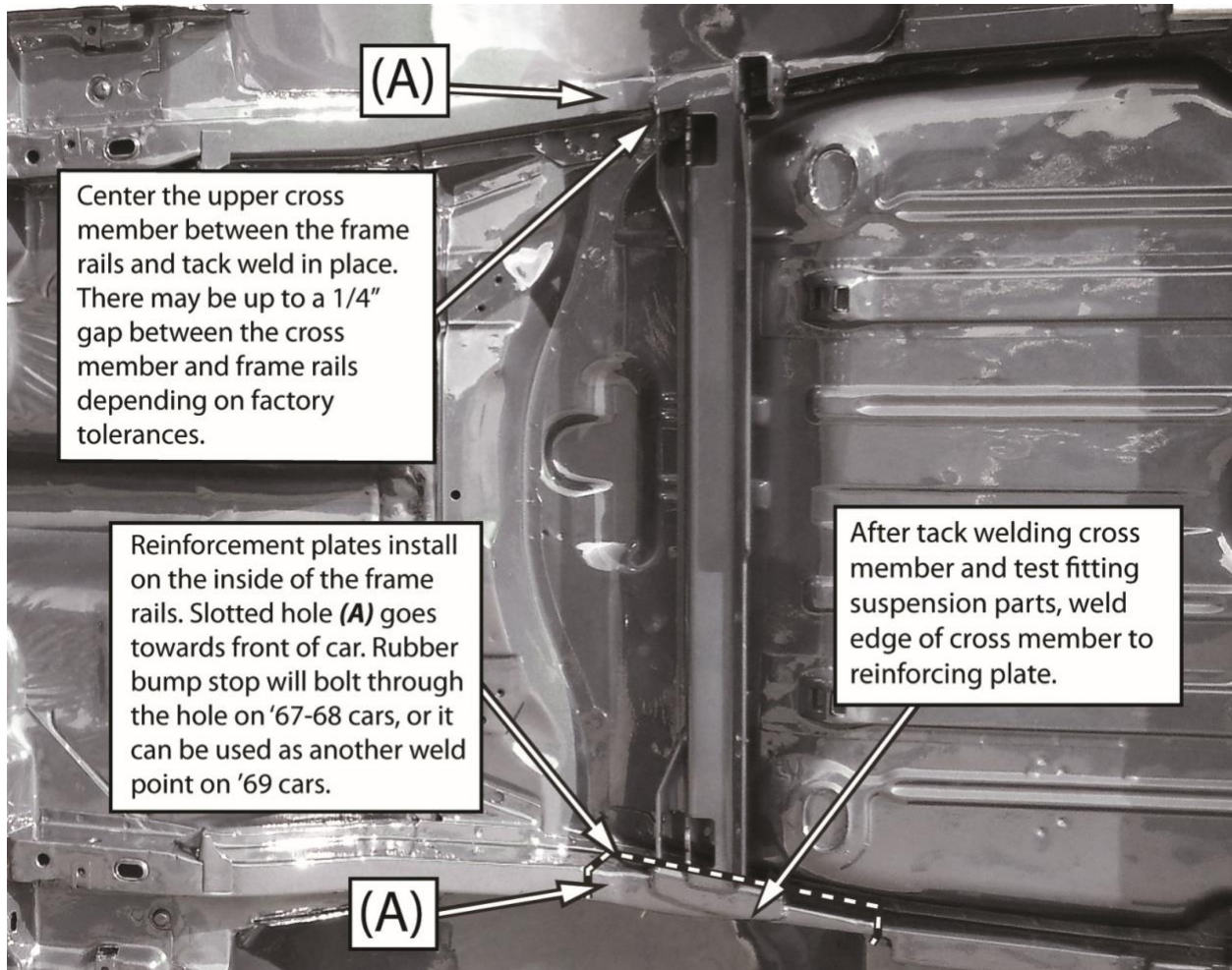
9.0 FINISHING UPPER MAIN CROSS MEMBER INSTALL

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9.1 Weld in the Upper Main Cross Member

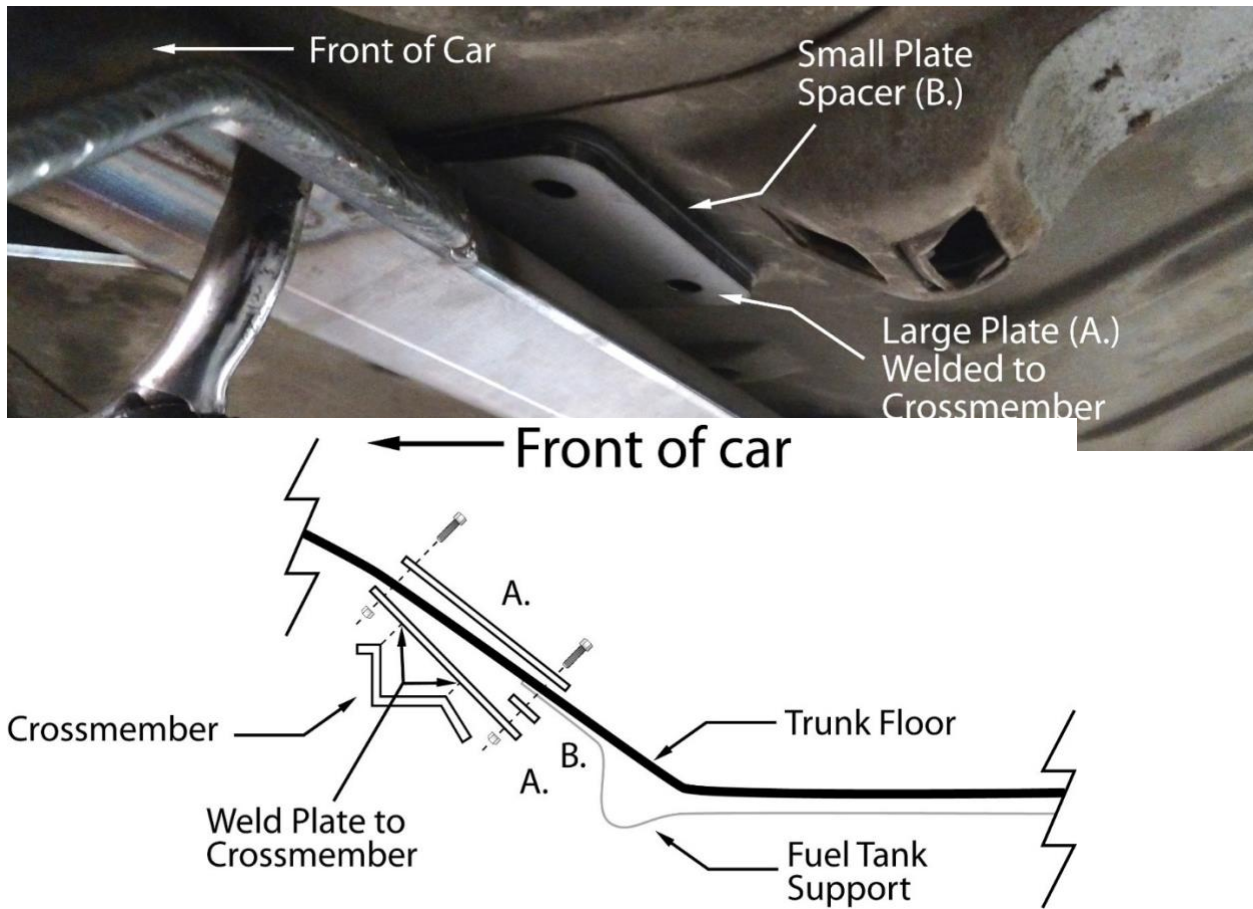
When welding on the chassis take care not to overheat the frame rails. They are thin and extra time is needed prevent damage/blow through of the sheet metal.

Weld the crossmember to the reinforcement plates.



9.2 Install Sandwich Plates

From under the car, using the pre drilled holes in the lateral support plates as a guide, drill the eight 3/8" holes through the trunk floor. The floor and crossmember plates will be at slightly different angles. Use the smaller shims (B.) between the crossmember plates and the floor at the back/ bottom side (See diagram above). If there is any remaining small gap between the plate and floor will typically suck down as the bolts are tightened. If there is an excessive gap, use washers or fabricate additional shims to take up the extra gap. Align the second pair of plates in the trunk and insert the eight bolts and nuts per above diagram. Tighten to 40 ft lbs.



9.2 Refinish Bare Metal

Finish/refinish the welds and any bare metal to your specification to mitigate corrosion.

10.0 FINAL ASSEMBLY

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10.1 Install Components

- Put the Springs on the coil over shocks and hang the shocks from the Upper Main Cross Member, use antiseize on the shank of the bolt
- Raise the rear end up into position to attach the lower shock mounts, ensure you have the correct tapered spacer on the heim joints, use antiseize on the shank of the bolt
- Swing the Articlinks in to position on the axle bracket and push the bolt through with antiseize on the shank of the bolt
- Install the driveshaft
- Install the torque arm, use antiseize on the shank of the bolt for the rear pivot
- Torque fasteners for:
 - Upper shock mounts
 - Lower shock mounts
 - Articlink front bolts
 - Articlink rear bolts
 - Torque arm pivot bolt
 - Pinion mount bolts
- Install Pan-Hard bar, center axle at ride height and jam the jam nuts
- Put the weight of the car on the suspension front and rear, set ride height
- Check Driveline Angle ([Go to Setting Pinion Angle](#))
- Recheck torque on all fasteners
- Grease the zerk fittings
- Fill the rear axles with lubricant
- Make and connect brake lines
- Bleed air from brake hydraulic system
- Install other components removed to install the Speedtech Performance Torque Arm Rear Suspension
- Perform a 4 wheel alignment

10.2 Check Torque of Fasteners

| Bolt | Location | Torque | 1 st Check | 500mi Check |
|-------------|------------------------|------------|-----------------------|-------------|
| 3/8" | Trunk Sandwich Plates | 40 ft.lb. | | |
| 5/8" Nylock | Lower Shock Mount | 140 ft.lb. | | |
| 1/2" | Upper Shock Mount | 90 ft.lb. | | |
| 9/16" | Rear Torque Arm Collar | 120 ft.lb. | | |
| 5/16" | Ford 9in Pinion Ring | 55 ft.lb. | | |
| 3/8" | GM 10 or 12 Bolt Ring | 20 ft.lb. | | |
| 1/2" SHCS | GM Snout Clamp | 90 ft.lb. | | |
| 1/2" | Bow Tie Pinion Mount | 65 ft.lb. | | |
| 5/8" | Rear Subframe Mount | 140 ft.lb. | | |
| 3/8" | Spring Pocket | 40 ft.lb. | | |
| 1/2" | Lower Arm Mount Frame | 90 ft.lb. | | |
| 1/2" | Lower Arm Mount Axle | 90 ft.lb. | | |
| 1/2" | Panhard Bar Joints | 90 ft.lb. | | |
| Grease | Lower Arms | | | |

11.0 ADDITIONAL INFORMATION

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11.1 Driveline Angle

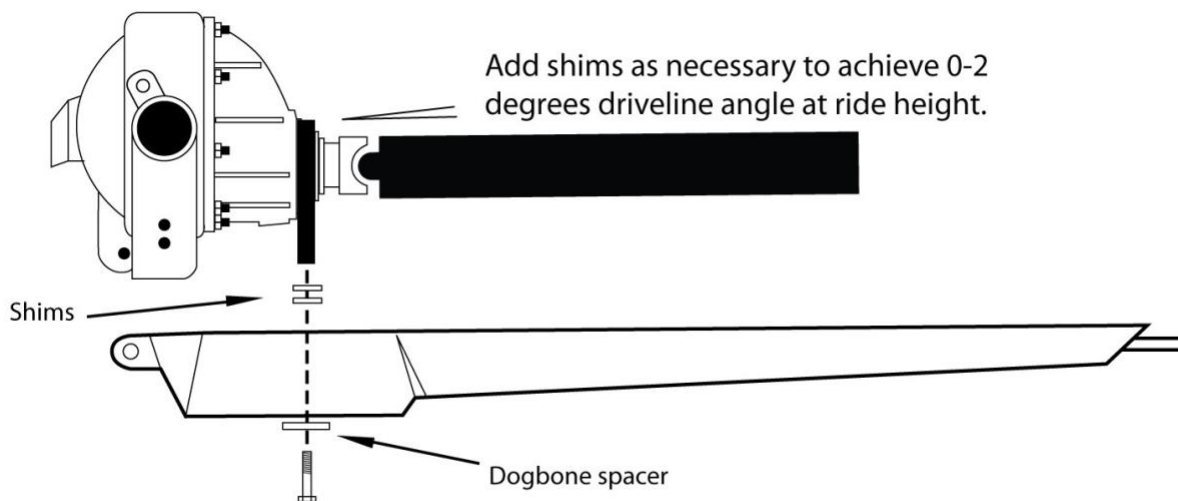
Pinion angle should be within the target range at the ride height. If you feel a drive shaft vibration at speed, you may need to adjust your driveline working angle. We have found this to be at optimum on our ExtReme products between 1.5-2 degrees. Use shims on either the rear pinion mount as seen in the diagram below or at the transmission crossmember until you have the correct angle and any driveline vibrations should go away.

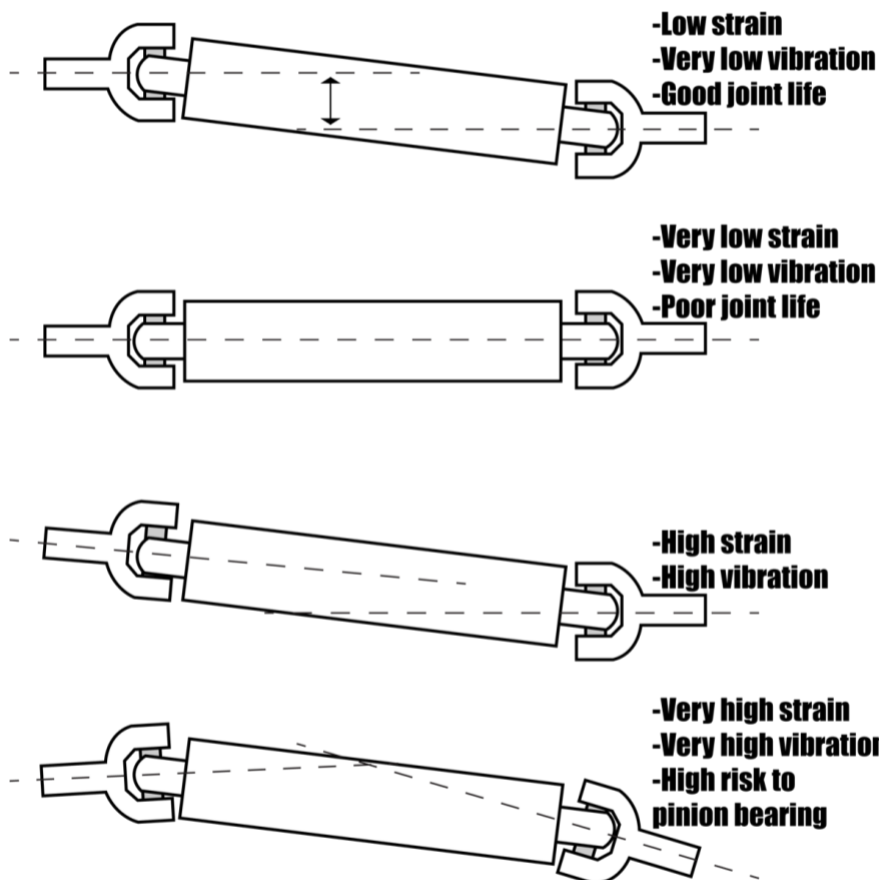
We have found that in our in house installs we have not needed to adjust the pinion as it is engineered into the system to be in the target range.

With all finished weight in the car adjust the pinion angle by:

Option 1. Raise, Lower or shim, the transmission to achieve the correct working angle. Note- pay attention to the headers' relation to the floor pan. Raising the mount too much could potentially touch the floor pan under load while lowering it may make driveline angles worse or reduce ground clearance. Be sure to check drive shaft clearance throughout the tunnel for either method.

Option 2. shimming between the billet pinion mount and the torque arm.





11.2 Rear Axle Lubrication and Break-In

11.2.1 Oil Specifcaiton

For Tru Trac and Wavetrack posi units, use a quality petroleum/mineral based oil.

NOTE: We do not recommend synthetic oil.

Friction additive/modifier is not required. Do not use any RedLine, Shockproof, Royal Purple or similar gear oils. Specifically, any standard 75W 90 or 140 will work just fine.

11.2.2 Oil level

Many differentials are easy to fill with gear oil. However, the 9" Ford design can be difficult to fill completely. The location of the fill plug on the 9" Ford can cause oil to run back out before it is completely full. Most 9" housings hold at least 2 1/2 – 3 quarts of oil and sometimes as much as 5 quarts. It is important to take your time and be sure that the oil has settled into all the crevices and recheck the oil level to be certain that it is completely full before driving the vehicle.

11.2.3 Break In

WARNING! ANY OVERLOADING OR OVERHEATING WILL CAUSE THE GEAR OIL TO BREAK DOWN AND THE RING & PINION WILL FAIL.

All new gear sets require a break-in period to prevent damage from overheating. After driving the first 15 to 20 miles, it is best to stop and let the differential cool before proceeding.

Dutchman's warranty requires at least 500 miles before towing.

DMI also requires towing for very short distances (less than 15 miles) and letting the differential cool before continuing during the first 45 towing miles.

This may seem unnecessary, but it is very easy to damage the differential by loading it before the gear set is completely broken in.

DMI recommends changing the oil after the first 500 miles. This will remove any metal particles or phosphorus coating that has come from the new gear set.

The greatest damage results when a new ring & pinion has been run for several miles during the first 500 miles and the oil is very hot. Any heavy use or overloading at this time will cause irreparable damage to the gear set that can be determined by inspection and will not be warranted by DMI.

DUTCHMAN AXLE WARRANTY EXCLUSIONS

1. Any damage due to abuse, overloading, or lubrication failure (e.g., oil deterioration, water contamination, low oil level).
2. Any vehicles used off road or for competition.
3. Mini and mid-sized vehicles with tires over 31" tall will not be warranted due to the overloading caused by tall tires.

Most items are not warranted against abuse, overloading, or improper lubrication. All rear axle parts must be returned to DUTCHMAN'S shop freight prepaid for inspection and determination. We do not authorize and will not pay for outside repairs. ANY UNAUTHORIZED OUTSIDE REPAIRS OR MODIFICATIONS VOID THIS WARRANTY. We will not pay for labor, inconvenience, loss of time or revenue, telephone calls, commercial losses, or loss of perishable goods. This is our only warranty expressed or implied. All returned goods must be accompanied by copy of purchase invoice within 30 days and will be charged a 20% service charge for handling.

11.3 Other Notes on Rear-Ends

11.3.1 Clutch Type Limited Slip Differential

Limited slip rear end chatter is normal for Positraction and clutch type differentials. Both rear tires must measure the same circumference in order for the differential to function properly without premature wear. Limited slip additive or friction modifier for limited slip differentials must be used with the oil to reduce Positraction chatter in the event that the oil is changed.

11.3.2 LOCKERS

Mechanical Locking differentials will bang and clunk during normal operation. Both rear tires must measure the same circumference in order for a locking differential to function properly.

11.3.3 GEAR NOISE

Care is taken to set up each rear gear set with as little gear noise as possible. Aftermarket (non-OEM) gears are designed primarily for strength and may be whiney/noisy. This noise is common and typically cannot be eliminated. DO NOT attempt to use synthetic oils hoping to quiet a noisy rear gear set.

11.3.4 SIGNS OF LUBRICATION FAILURE

When a gear runs low on oil, damage is sure to result. The cause of damage is not always obvious. When a differential runs low on oil, the oil volume may not be sufficient to keep the gear cool. Once the oil breaks down from contact with the hot gear, wear occurs very rapidly. Material will wear off the drive side of both the ring & pinion teeth and leave a feather like pattern on both surfaces. A gear that wears from friction due to lack of lubrication and excessive heat seldom experiences a color change from heat because any discoloration is worn off the teeth during each contact. Ring & Pinion gears are heat treated separately so that the pinion, whose teeth make contact more often than the ring gear, is designed to be harder. To accomplish this, the two gears are heat treated separately and a soft gear will not cause both the ring & pinion to wear.

12.0 Congratulations

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Congratulations on completing your project, we know you will get many years of enjoyment from your Torque Arm Rear Suspension. Please join the group [Team Speedtech](#) on Facebook; Team Speedtech is a community of like-minded individuals using Speedtech Performance products. The Group's members include customers, our dealers and factory employees - each with a passion for Pro Touring muscle cars. You can ask questions and get advice from the group members as well as share your experience. Within the group we enjoy seeing the videos and pictures during the progress of your projects so post up. We also encourage you to share pictures and videos of your finished projects out on the road, at the show & shine, on track or however you get enjoyment from your ride, we want to see it!

Thank you for choosing Speedtech Performance! We know you have a choice, and we appreciate that you entrust us with your chassis and suspension needs for you custom muscle cars.

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