

Instruction Guide

Torque Arm Rear Suspension
1970-1981 F-Body



Speedtech
PERFORMANCE

CHASSIS - SUSPENSION - PRO TOURING - AUTOCROSS - DRAG RACING - CUSTOM BUILDS

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Figure 1: 1970 Camaro, features our Torque Arm [picture by Nick Relampagos]

Congratulations on the purchase of your new Speedtech Performance torque arm rear suspension. Use only approved, appropriately rated jack and jack stands, and take all required safety precautions to complete the job safely and correctly. If you have any uncertainties, seek the assistance of a highly qualified workshop.

Read and understand all instructions thoroughly before you begin. Your main assembly and setup of your new torque arm can be done in a home garage with hand tools and basic welding equipment.

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

Speedtech Performance wishes you the best with your project!

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1.0 GENERAL INFORMATION

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1.1 THIS GUIDE

Thank you for purchasing your new Speedtech Performance torque arm rear suspension. 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. All must be installed by qualified professionals only. Read all instructions thoroughly before beginning, and take all required safety precautions to do the job carefully and correctly. If you have any uncertainty, seek assistance from a highly qualified workshop.

This kit requires components that were previously installed and explicitly designed for your project. The upper rear crossmember, lower-arm-mounted support brackets, torque-arm crossmember, subframe connectors, and chassis are unique to each vehicle. These kits come with their own instructions for proper fitment. Even though each car is exceptional, the general concepts and specific specs for installing the torque arm assembly remain the same across the vehicle line. Images and processes may vary slightly between kits.

If you have opted to use your current rear axle housing rather than ordering a new Speedtech-prepped axle housing, you will need to remove the existing leaf-spring axle pad mounts and have the torque-arm rear axle brackets welded on. A guide for the bracket location is included later in these instructions. We highly recommend you use a professional shop familiar with welding brackets to rear axles, one that has an axle jig and/or the ability to straighten the axle tubes if they warp during welding.

While Speedtech's suspension systems are safer and more comfortable than factory suspension on the street, they are also designed to meet the needs of those participating in off-highway road races and autocross competitions. To achieve the maximum benefit from our system, you should anticipate adjusting and tuning the suspension to optimize performance for the vehicle, driver, and racing type. Some of this, such as tuning sway bars and shock settings, can be done trackside by making adjustments and seeing or feeling how the car responds. Speedtech recommends including a tire-probe pyrometer and an air pressure gauge in your trackside kit.

Other adjustments, such as tuning a bump steer and caster, may require specialized equipment and professional help. Speedtech's technical department can share insights on how to make these adjustments to help you get started.

1.2 OVERVIEW

These instructions outline the rear suspension assembly for the torque arm.

Take necessary precautions when welding the inside of your vehicle, and remove any nearby flammable materials, including the seats, carpet, inner heater box, and insulation padding, before performing this instruction. Be sure to wear proper protective gear when using power tools and keep sparks away from glass and other interior components when grinding and welding.

1.3 TOOLS

Installation of the Speedtech Performance torque arm rear suspension can be done on the floor with a cutoff wheel, basic welder, and simple hand tools.

- Wrench
- Socket Set
- Pliers
- Floor Jack
- Jack Stands
- Cut Off Wheel
- Welder

2.0 CHECK IN PARTS AND HARDWARE

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2.1 CHECKING IN THE ORDER

Check your order as soon as possible. To check the order, Speedtech has provided tables that can serve as checklists, as shown in Figure 2. All bolts and nuts are NF unless otherwise noted. Hardware comes in several boxes. 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
	1	Torque Arm Dog Bone	
	1	Torque Arm Pin Bushing	Delrin (Plastic)
	2	Body Mount	3 Groove
	2	Body Mount	2 Groove
	2	Front Spring Spacer	2" Delrin
	1	Pin Bushing Bolt	3/8" x 3/4"
	2	Front Spring Spacer	2" Delrin
	4	Cap Screw	3/8 x 1 1/4" NF
	4	Cap Screw	3/8 x 2" NF
	8	Nylock Nut	3/8" NF
	5	Plate Washer	3/8"
	14	Cap Screw	3/8 x 1 1/4" NC
	30	Flat Washer	3/8"
	1	Pin Bushing USS Plate Washer	3/8" NC
	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"
	2	Pinion Mount Bolts	1/2" x 2-1/2"
	2	Pinion Mount Washer	1/2"

Lower Arms

X	#	Description	Size
	2	Lower Arms	Set to vehicle specs
	2	Lower Arm Bolts	1/2" x 3-1/2"
	2	Lower Arm Bolts	1/2" x 4-1/2"
	4	Lower Arm Nylock Nuts	1/2"
	6	Lower Arm Washers	1/2"

Shocks

X	#	Description	Size
	2	Adjustable Coil Over Shocks	≈ 4" Stroke
	2	Upper Shock Mount Bolts	1/2" x 1-3/4"
	2	Upper Shock Mount Nuts	3/8"
	2	Upper Shock Mount Washers	3/8"
	2	Lower Shock Mount Standoff	Aluminum
	2	Lower Shock Short Bolts	5/8" x 1"
	2	Lower Shock Long Bolts	5/8" x 4-1/2"
	2	Lower Shock Nylock	5/8"
	4	Flat Washer	5/8"

Panhard Bar

X	#	Description	Size
	1	Panhard Bar	25-1/2" 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	Cap Screw	5/8 x 3 1/2"
	2	Lock Washer	5/8"
	2	Panhard Bar Mount Bolts	1/2" x 2-1/2"
	2	Panhard Bar Mount Nuts	1/2"
	4	Panhard Bar Mount Washers	1/2"

One of the following kits will be part of the hardware.

Ford 9in Pinion Mount

X	#	Description	Size
	1	Pinion Mount	Billet
	5	Pinion Mount Bolts	3/8" x 2-1/4" SHCS
	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

X	#	Description	Size
	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

Figure 2: Check the tables that include all the individual parts ordered

3.0 GETTING STARTED / INSTALLATION

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3.1 PREP/REMOVAL

NOTE: On the underside of the floor on some second-generation F-Body's, some brackets protrude into where the rear crossmember will be installed. These need to be removed to ensure proper fitment of the crossmember.

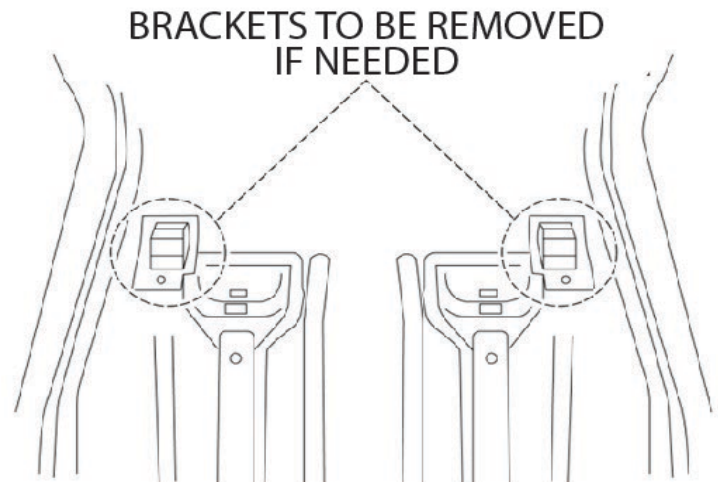


Figure 3: Brackets that may need to be removed

Installation of the Front Torque Arm Crossmember:

1. Support the front of the subframe.
2. Remove the rear subframe bolts and original mounts.
3. Loosen the middle subframe bolts and apply additional pressure at the front support to create enough clearance for the rear of the subframe to drop.
- 4a. For Early F-Bodies: Place the front crossmember over the hat channel (with the notch in the center facing the rear axle), then install the supplied subframe mounts.
- 4b. For Late F-Bodies: Install the supplied subframe mounts into the subframe first, then slide the torque arm crossmember between the mount and the body.
5. Once the crossmember is in place, install the lower subframe mount cup, washers, and bolts. Keep this assembly slightly loose for future adjustments.

3.2 CROSSMEMBER SIDE PLATES

Put the side reinforcement plates in place and hold them in place with a clamp, being careful not to crush the unibody frame rail. Lift the rear crossmember and hold it tight to the side reinforcement plates, centering the crossmember in the chassis. The rear edge of the crossmember should be approximately 21 1/4" from the original leaf spring shackle mount center line, presented in Figure 4.

There will be up to a 1/4" gap between the crossmember 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 damage repaired, corrosion repaired, and floor or trunk pans replaced. Any of these repairs, as well as other repairs or modifications, could affect the fitment of the crossmember and create a tighter fit or a wider gap between the crossmember and the side reinforcement plates.

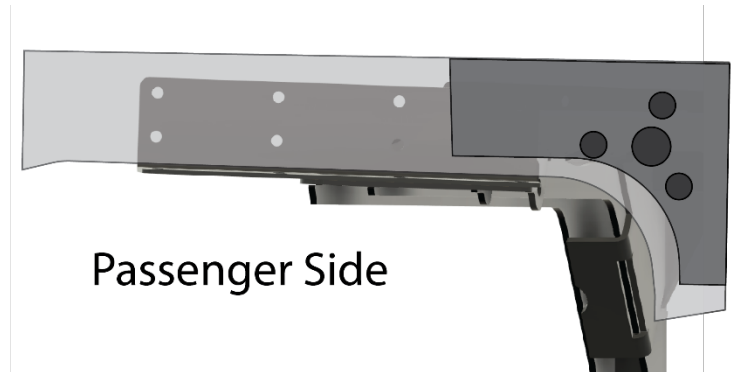


Figure 4: Side plates

3.3 REAR CROSSMEMBER FITMENT

- Tack the frame rail brace plates into the car.
 - Protect the inside fold of the brace with weld-through primer.
 - Locate the brace back onto the prepared frame rail of the car.
- Mock up the crossmember into place. It will fit neatly in between the frame rail walls and the trunk floor, just in front of the gas tank strap hooks.
 - Tap into place by removing and working the sheet metal that is preventing a snug fit with the floor and frame rails.
 - The Panhard bar mount should be perpendicular to the level car.
 - The crossmember will be square with the car.
- Once fitment is insured, hold the crossmember in place by either tacking it or using self-tapping sheet metal screws into the frame rail.
 - Ensure that the crossmember can handle the weight of the suspension during this mockup phase of the install.

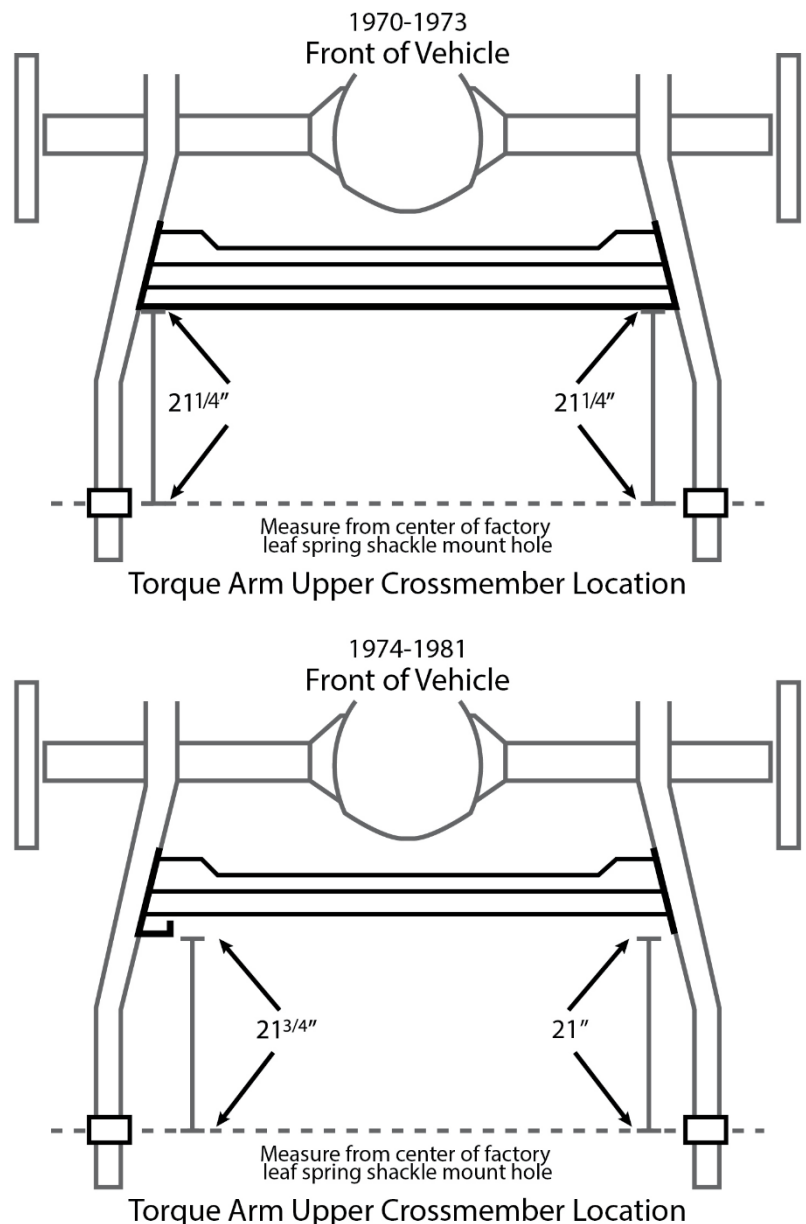


Figure 5: Crossmember fitment

Pro tip: The measurements provided above serve as a basic starting point. The crossmember position is adjustable because the shocks and Panhard bar have rod ends that allow for misalignment.

Position the crossmember close to the measurements and use clamps or tacks to hold the crossmember in place during the mockup.

3.4 AXLE PREP/REMOVAL

NOTE: Speedtech offers support for GM 10 and 12 bolt housings and Ford 9" housings. Follow the corresponding instructions that match the build.

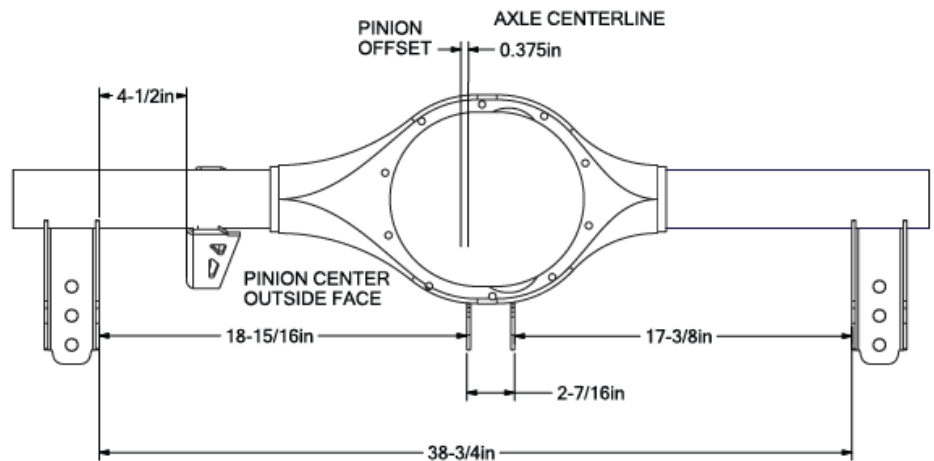
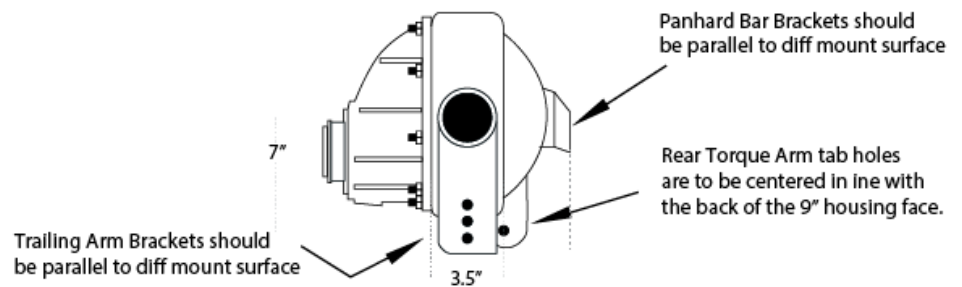
Since the new Ford 9" housings, Speedtech offers brackets pre-welded for each application.

To prep and remove the axle:

- Remove all previous brackets and spring plates on the housing.
- Weld the Speedtech brackets onto the housing. Follow the diagram specific to the project. All diagrams will be in the specific vehicle instructions, or can be found online at speedtechperformance.com

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

'70-81 Camaro Diff Bracket Welding Guide 9" Ford



All Measurements are based off Axle Center Line

Figure 6: Example diagram

Now, assemble the rear axle, then install the 3rd member, brakes, and axles per Dutchman's instructions.

3.5 FORD 9"

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

- Removes all the original pinion support bolts.
- Bolt on the billet pinion mount using the new bolts.
- Torque 7/16 bolts to 60 lb-ft
- Torque 3/8 bolts to 35 lb-ft

Note: Speedtech supports two 3rd-member options: standard steel and the more advanced billet member. The bolt-and-pinion support shapes for these two members differ. Verify that the pinion mount kit matches the rear end housing.

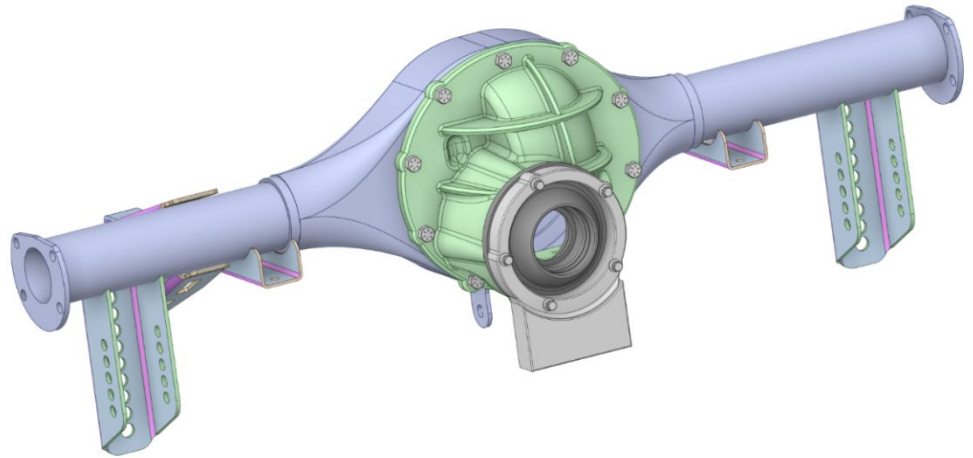


Figure 7: Pinion mount

3.6 GM 12 & 10 BOLT

- Install the rear ring.
 - Remove the stock rear cover from the housing.
 - Clear casting flash from the housing to ensure a tight fit by dry fitting the ring, marking the interference areas, then grinding the flash off the housing.
 - Once all the housing is clean and cleared, lay down a silicone bead on the housing.
 - Set the mounting ring in place and apply an additional silicone bead on the mounting ring surface.
 - Install the cover on top of the ring.
 - Torque to manufacture's specs, otherwise 20 lb-ft



Figure 8: Rear ring

NOTE: Some 2nd-gen Camaros will require modifications to the back of the driveline tunnel to clear the billet pinion mount. We recommend assembling the suspension and test-fitting it in your car. If additional clearance is required, consult your fabricator or a reputable shop to perform the modification. This is limited to 12 bolt applications; this is not required for 9" Ford axles.

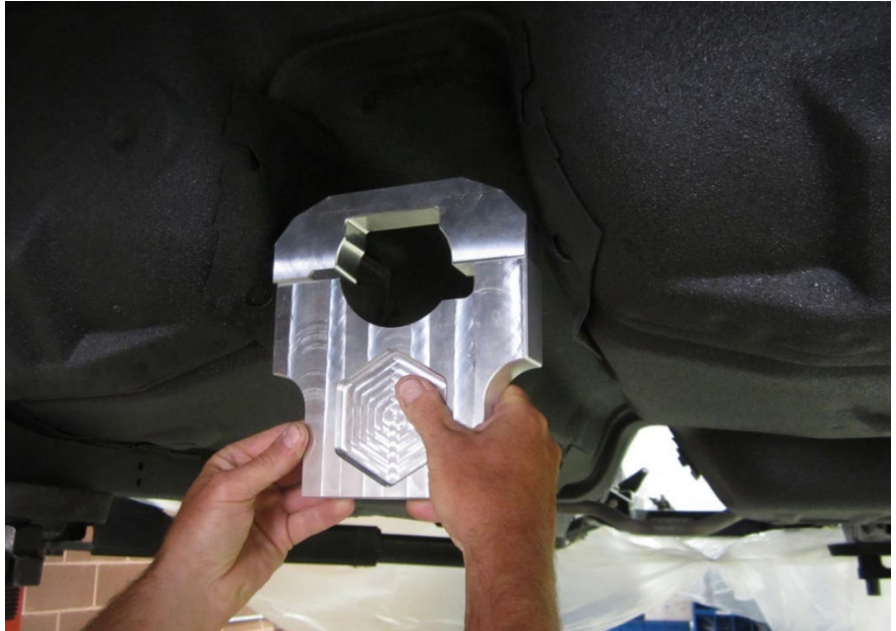


Figure 9: Dry fitting the billet clamp

Install the billet aluminum pinion clamp. Every pinion snout casting is unique and must be modified to fit.

- Dry fit the billet clamp onto the pinion mount and mark interference areas (refer to Figure 9).
- Cut and grind the pinion snout to fit the billet pinion clamp. Keep in mind the factory pinion bearing oil passage.
- Protect the now exposed cast to prevent rust.
- Bolt on the billet aluminum pinion clamp using the (2) SHCS.
- Bolts will be torqued later in assembly to 65 lb-ft

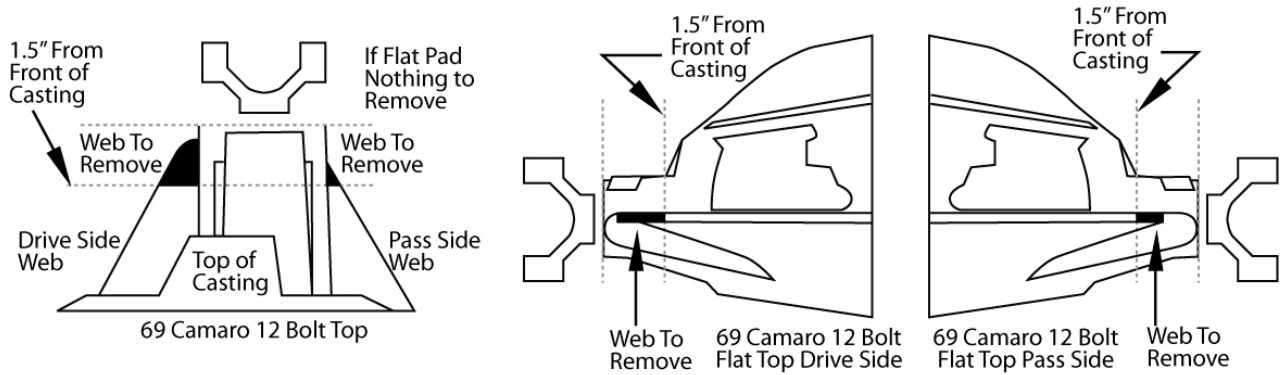
Retorque after the first 500 miles.

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



Figure 10: Billet pinion mount

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!**

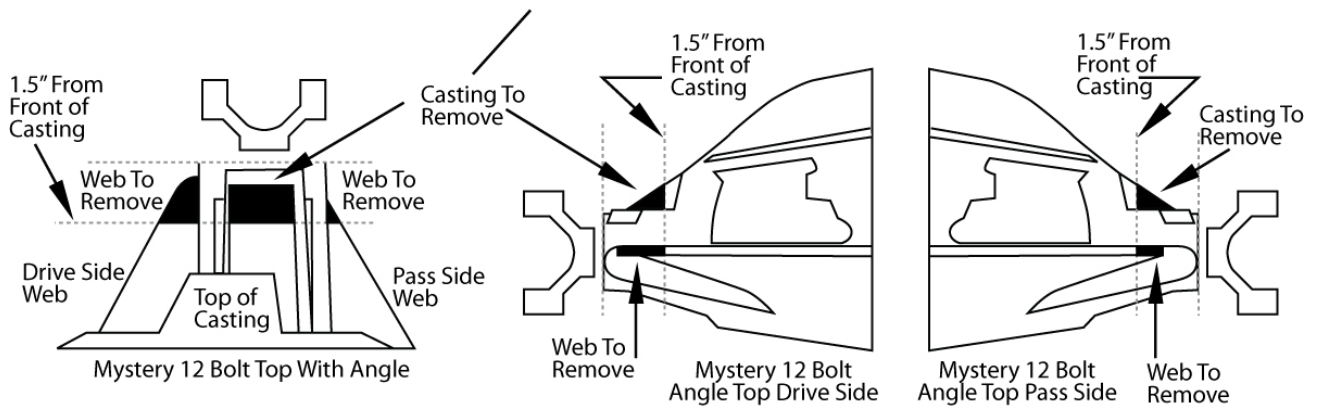


Figure 11: Trimming your housing to fit the pinion mount

3.7 AXLE HOUSING INSTALL

- Assemble the Panhard bar with the left-hand and right-hand thread rod ends with matching lock nuts. Make sure equal thread engagement is present at both ends. Do not tighten.
- Assemble the shocks and install them into the rear upper cross member using 1/2" bolts
- Prepare the lower trailing arms by presetting the hole distance to 24.50".
- Preinstall the lower shock mounts on the backside of the lower brackets on the axle housing.
- Bolt the (2) billet shock risers on the same position hole using (2) 5/8" short bolts.

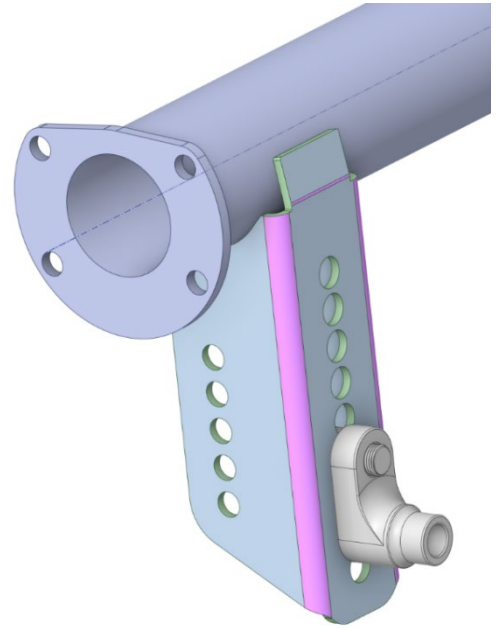


Figure 12: Axel housing installment

NOTE: The mounts can be located in any pair of holes oriented either way. The final hole placement will be determined by desired ride height and shock length.

3.8 PANHARD BAR

The Panhard bar adjustment includes: Main Bar, (2) rod ends (RHT & LHT), and (2) jam nuts. The threaded adjustment will laterally center the rear axle.

The vertical bar adjustments are for adjusting the roll center. It is recommended that you set the bar parallel to the ground at ride height with all the finished weight in the car.

- Adjust the Panhard bar laterally to center the axle.
 - Hang a plumb bob from the peak of both side rear wheel openings.
 - Measure inward to the adjacent point on the axle.
 - Adjust as needed.
- Lock the position using the jam nuts.
- Torque the 1/2" rod ends to 90 lb-ft

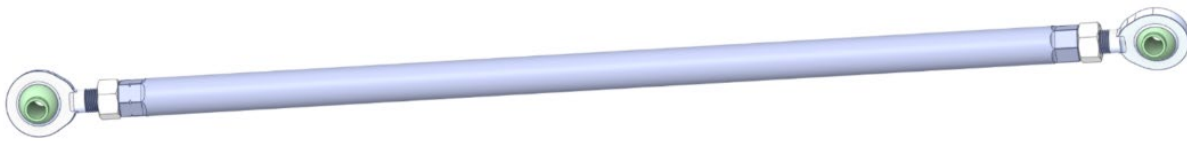


Figure 13: Panhard bar

3.9 TORQUE ARM INSTALL

- Install the torque arm Delrin bushing on the front pin.
 - Slide the bushing onto the pin.
 - Apply blue Loctite on the 3/8 bolt.
 - Bolt into the front pin, using a washer and the lock washer.
 - Torque to 35 lb-ft



- Assemble the rear pivot collar.
 - Press in the two (2) bushings and the 9/16" x 2" sleeve into the rear mount.



NOTE: We now have a shim kit that is sent to make centering on the Torque Arm easier.



Figure 14: Three images presenting the tools for installing the torque arm

3.10 AXLE INSTALLATION

- Raise the axle assembly into position.
- Attach the axle to the hanging shocks using the long 5/8" bolt through the preinstalled shock mount riser.
- Check the rough ride height of the axle housing and make all adjustments to the lower shock mount standoff if needed to achieve the desired height.
- Install the Panhard bar into the vertical slots on the crossmember and the axle.
 - Use (2) 1/2" bolts, nuts, and (4) washers to bolt the rod end sandwiched into the slot boxes.
 - Roughly center the axle housing by turning the Panhard bar to lengthen or shorten the length.
 - Lock it into position using the jam nuts.
- Install the trailing arms onto the axle. Loosely bolt into place using (2) 1/2" x 3-1/2" bolts and nuts. Torque later to 90 lb-ft
- Install the lower arms into the original leaf spring pockets. Loosely attach into place with (2) 1/2" x 3-1/2" bolts and nuts. Torque to 90 lb-ft
- Attach the leaf spring pockets to the body with the original hardware.

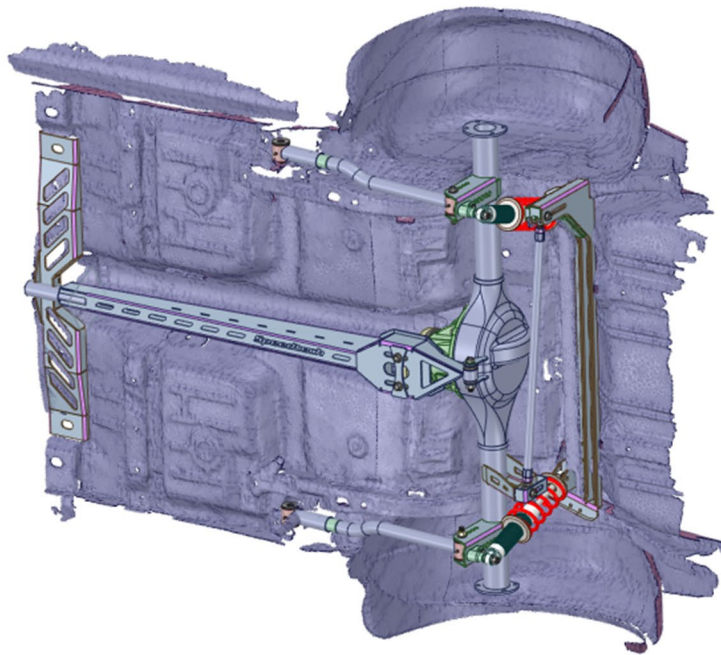


Figure 15: Adding all major components in place

NOTE: May look slightly different than your application

Assemble the torque arm with the housing bolted to the trailing arms, Panhard bar, and shocks.

Use a ratchet strap over the axle to pull backward and hold the 3rd member pinion up. Remove the jack, install the torque arm into the front crossmember, then lift into the rear tabs at the housing. Adjust shims at the rear and front crossmember to align the holes in the pinion mount to the torque arm. Once aligned, remove the ratchet strap and bolt the pinion mount to the torque arm.

Attach the torque arm to the axle housing.

- Apply anti-seize to the 9/16" x 3-1/4".
- Slide the rear collar into the lower tabs connected to the prepared axle housing. This can only fit one way, having the "Speedtech" face down and away from the housing.
- Bolt on using the prepared 9/16" x 3-1/4" bolt, 2 washers, and 9/16 stover lock nut.
- Torque to 130 lb-ft

• Attach the torque arm to the pinion mount.

- Preinstall the (2) 1/2" bolts and washers into the "dog bone" plate.
- Rotate the torque arm until it is in contact with the billet pinion mount.
- Loosely bolt the "dog bone" assembly through the torque arm into the pinion mount.

NOTE: The pinion angle is adjustable by adding shim spacers between the torque arm and the pinion mount. This final angle adjustment should be made after the rear suspension is fully installed and set to ride height. Refer to the pinion angle section at the end of these instructions.

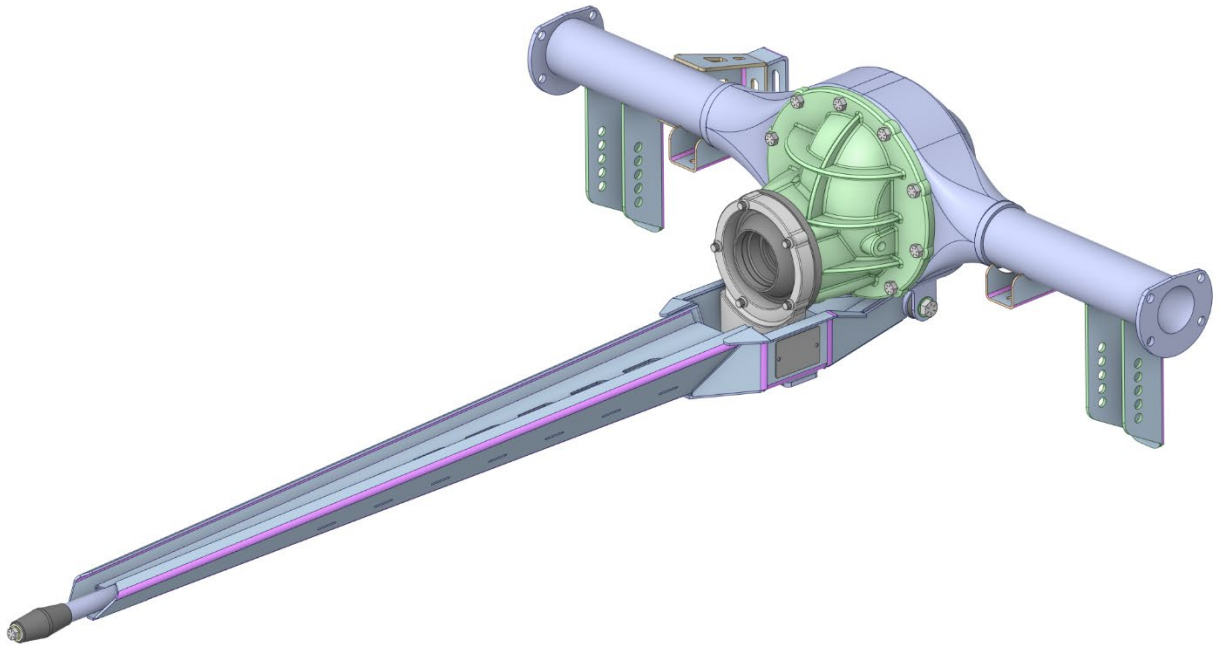


Figure 16: Attach the torque arm to the pinion mount

NOTE: For GM axle projects, the pinion clamp should be squared up to the torque arm and finally fitted to the snout with the torque arm on. Use red Loctite and torque bolts to 40 lb-ft

WARNING: Re-torque after first 500 miles.

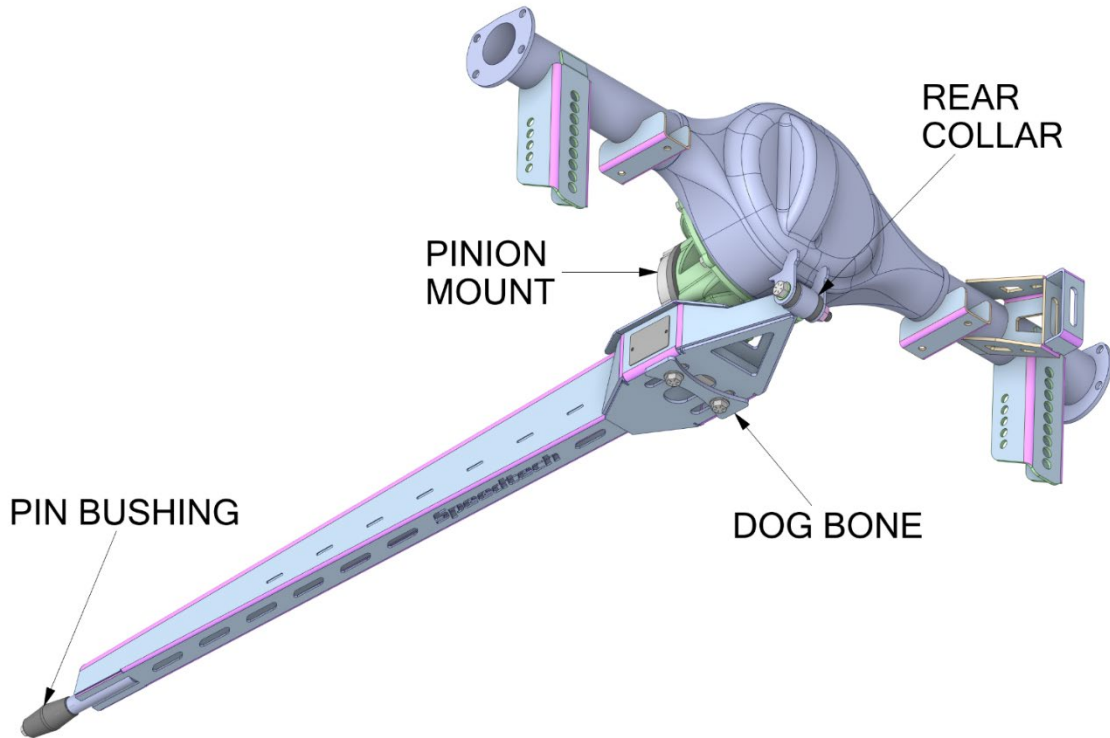


Figure 17: Impression of torque arm install

NOTE: Now that all major components are in place, take extra time and care to make sure all measurements meet specifications. The lower arms are adjustable to center the wheels in the wheel wells and square the axle to the frame, with the axle at ride height. Measure the axle-to-body gauge holes to ensure the axle is square in the body, and adjust the leaf spring pocket mounting to the body to make the adjustments.

- Measure from the axle tube to the spot on the frame, such as the center of a spring pocket bolt, on both sides of the axle.
- Adjust if needed by rotating the arm to lengthen or shorten.
- Double check that the axle is in the correct position: ride height, the wheel in the wheel opening, and the axle is square with the car.
- Make the adjustments needed by moving the lower shock mount and by turning the lower arms to make them longer or shorter. Repeat until satisfactory.

For optimum handling, trailing arms should be set near parallel to the ground at ride height. Lowering the rear of the arm increases anti-squat, helping increase traction.

Verify that trailing arms are not on a bind by unbolting them at the axle one at a time and verifying that they swing in and out of the trailing arm pocket on the axle without side binding. (Adjust front spring pocket as necessary to resolve alignment issue. Once the spring pocket is set, drill 2 3/8 holes through the pocket into the floor and a pair of reinforcement bolts.

Once everything is mocked up and clearances and alignment are verified, remove the torque arm, housing, shocks, and Panhard bar.

Now, weld the shock crossmember installation into place.

Then, paint or touch up welded parts to prevent corrosion.

On the early model, drill 8 3/8 holes through the trunk floor and install reinforcement plates into the trunk. Use the supplied 3/8" bolts, washers, and nuts to attach the plates.

Finally, reassemble the rear suspension and verify proper alignment.

This concludes the component installation of the Speedtech Performance torque arm. The following instructions are for your reference on fine-tuning and maintenance, component specs, and warranty information. The following steps are intended to be completed after the vehicle is assembled.

4.0 ALIGNMENT / SET UP

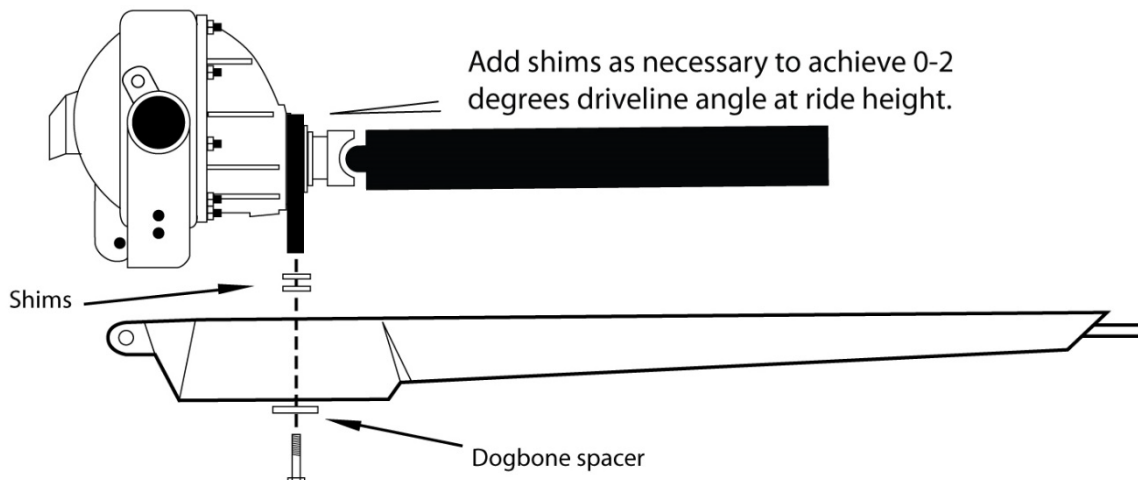
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- Support the housing using a jack and raise it to ride height with the driveshaft installed.
- Measure the angle between the pinion and the drive shaft, and the drive shaft to the engine. A digital level works well for this.
- Check for any potential clearance issues with the drive shaft and the tunnel.

NOTE: The working angle of each u-joint will ideally be the same.

4.1 PINION ANGLE ADJUSTMENT

- Make any adjustments, if needed, to the pinion angle. There are two ways you can do this:
 1. Add shims between the billet pinion mount and the torque arm. Refer to Figure 18.
 2. Raise or lower the height of the transmission crossmember



If you do not have access to an angle gauge, most smart phones have a free angle measurement download app. available.

Figure 18: Location of shims

NOTE: Pay attention to the header's relation to the floor pan. Raising the mount too much could potentially contact the floor pan under load, while lowering it may worsen driveline angles or reduce ground clearance. Be sure to check drive shaft clearance throughout the tunnel for either method.

- Once the pinion angle is set and all things are cleared. Apply red Loctite to the 1/2" bolts.
- Torque to 90 lb-ft

Note: Many factory engines are angled downward by 3-3.5 degrees, and if left at this angle, will cause driveline vibration at a lower ride height than stock. An excessive difference in the working angles between the front and rear u-joints causes this condition.

If you feel a drive shaft vibration at speed, you may need to adjust your driveline working angle. Speedtech has found the optimum engine angle on our ExtReme products to be 1.2 -2 degrees as compared to the frame if the frame is level at 0 degrees.

Use shims on either the rear pinion mount, as seen in Figure 19, or at the transmission crossmember until you have the correct angle, and any driveline vibrations should go away.

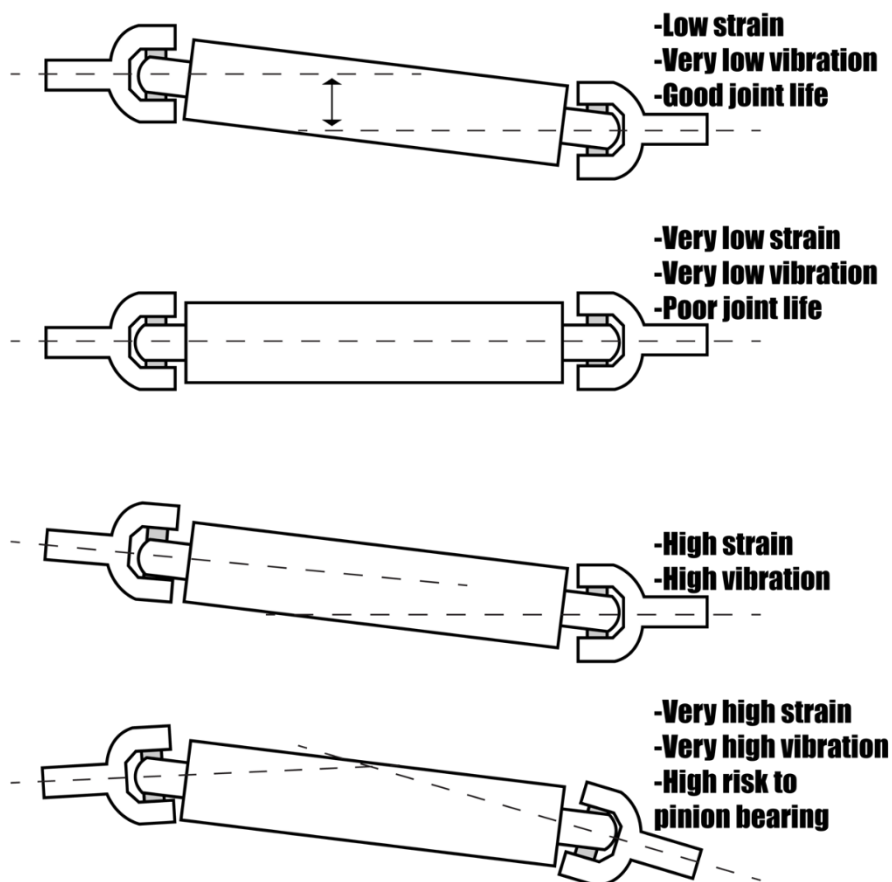


Figure 19: Pinion angles

4.2 FINAL TORQUE CHECKLIST

Final Torque Checklist and 500-mile Checklist

The following needs to be performed before you hit the road. It also needs to be checked after 500 miles to ensure safety. It will also be a quick reference for a routine maintenance schedule.

Be sure that all measurements are correct and double-check that all components have proper clearance throughout your suspension's travel range. Torque all bolts to spec. Tighten all loose suspension bolts and double-check all bolts to ensure they are all tight. It is recommended that you fill all grease fittings now. Speedtech recommends Permatex Ultra Slick Synthetic Grease, but any high-quality chassis grease will work. For your Sweet power rack-and-pinion, we recommend using Sweet or Jones full-synthetic power steering fluid for best performance and to avoid overheating with standard-type fluids during performance driving.

This concludes the instructions for the rear torque-arm suspension.

Bolt	Location	Torque	1 st Check	500mi Check
1/2" or 9/16"	Lower Arm Mount	90 lb-ft		
5/8" Nylock	Lower Shock Mount	90 lb-ft		
3/8" NC Nut	Upper Shock Mount	90 lb-ft		
9/16"	Rear Torque Arm Collar	90 lb-ft		
1/2"	Pinion Mount	90 lb-ft		
1/2"	Torque Arm Receiver Box	90 lb-ft		
1/2" SHCS	GM Pinion Snout Clamp	90 lb-ft		
1/4"	GM Rear Cover	20 lb-ft		
3/8	Ford 9in Pinion	35 lb-ft		
7/16		60 lb-ft		
1/2"	Panhard Bar Joints	90 lb-ft		
Grease	Lower Arms			

Figure 20: Chart created to double-check proper clearance and a routine maintenance schedule

5.0 CONGRATULATIONS

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Congratulations on completing your project! We know you will enjoy your project for many years. Please join the Team Speedtech group on Facebook. Team Speedtech is a community of customers, dealers, and factory employees who are passionate about pro touring muscle cars and use Speedtech Performance products. You can ask questions, get advice from group members, and share your experience. Everyone enjoys seeing videos and pictures throughout your project, and Speedtech encourages you to share them!

Thank you for choosing Speedtech Performance and for entrusting us with your torque-arm rear suspension for your custom muscle car.

Speedtech Performance, LLC
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6.0 WARRANTY

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DIFFERENTIAL CARE, BREAK-IN, and WARRANTY INFORMATION

OIL REQUIREMENTS

For Tru Trac and Wavetrack posi-units, use a high-quality petroleum- or mineral-based oil. **The Manufacturers 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.

OIL LEVEL

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

BREAK IN

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 overheating and damage. 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 most significant damage occurs when a new ring & pinion is 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, as determined by inspection, and will not be covered under DMI's warranty.

CLUTCH TYPE "POSITRACTIONS"

Posi-traction chatter is everyday in limited-slip and clutch-type posi-traction differentials. Both rear tires must have the same circumference for the differential to function properly without premature wear. **A limited-slip additive or friction modifier for limited-slip differentials must be used with the oil to reduce positraction chatter when the oil is changed.**

LOCKERS

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

GEAR NOISE

Richmond Gear and other aftermarket (non-OEM) gears are designed primarily for strength **and may be noisy**. This noise is especially inherent in vans and quiet passenger cars. **No gear manufacturer warrants their product or setup to be 100% silent.**

SIGNS OF LUBRICATION FAILURE

When a gear runs low on oil, damage is sure to result. The cause of damage is not always apparent. 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, leaving a feather-like pattern on both surfaces. A gear that wears from friction due to a lack of lubrication and excessive heat seldom experiences 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.

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 or 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. A copy of the purchase invoice must accompany all returned goods within 30 days, and a 20% service charge for handling will be applied.