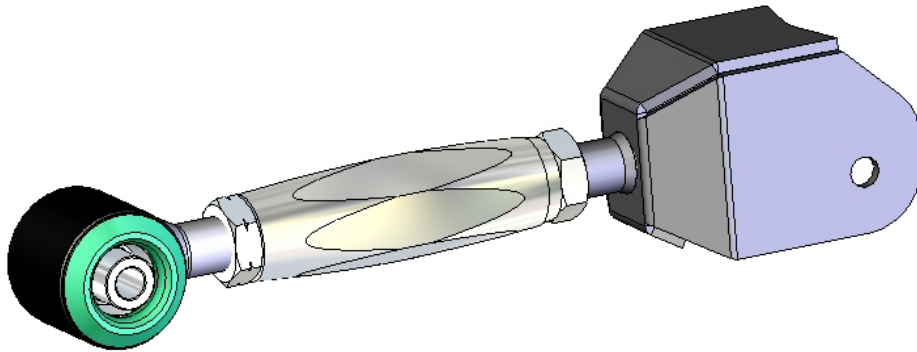


WATKINS MOTORWORKS

SPORT SUSPENSION

1203AA
64-67 GM A-BODY
Double Adjustable
Trailing Arms



Warning: This installation should be performed by a trained professional. Note, pictures in this booklet are from a 77-96 GM B Body. Installation for your 64-67 A-Body is very similar.

Tools Required for this Installation

- 4 post lift or alignment rack preferable
- Air Chisel, Angle Finder (Digital Preferred), Dead blow hammer
- The following sockets or wrenches: 10mm, 13mm, 15mm, 16mm, 18mm, 21mm

REMOVAL OF STOCK UPPER TRAILING ARMS

1. Raise the vehicle to access the rear end section.



2. There are various methods for installing your new upper trailing arms. Preferences in methods are mainly based on the way you remove the old rubber Can Bushings from the differential. Some may find it easier to detach the entire differential (rear end) from the car in order to remove the Can Bushings. This makes it easier to get at the Can bushings for removal and replacement. The only problem with this method is that it requires much more to be disconnected e.g. brake lines, parking brake, axle u-joint, and lower trailing arms. However, it is possible to remove the Can Bushings without taking the rear end off the car, but it's tricky.

In this manual, we will describe how to replace the Can Bushings without removing the rear end from the car.

3. First, raise the rear of the vehicle so that the rear wheels are off the ground. If you are using a 2-post lift, support the differential with a hydraulic tranny jack.
4. Remove the rear shocks.



5. Remove the rear sway bar from the lower trailing arms.

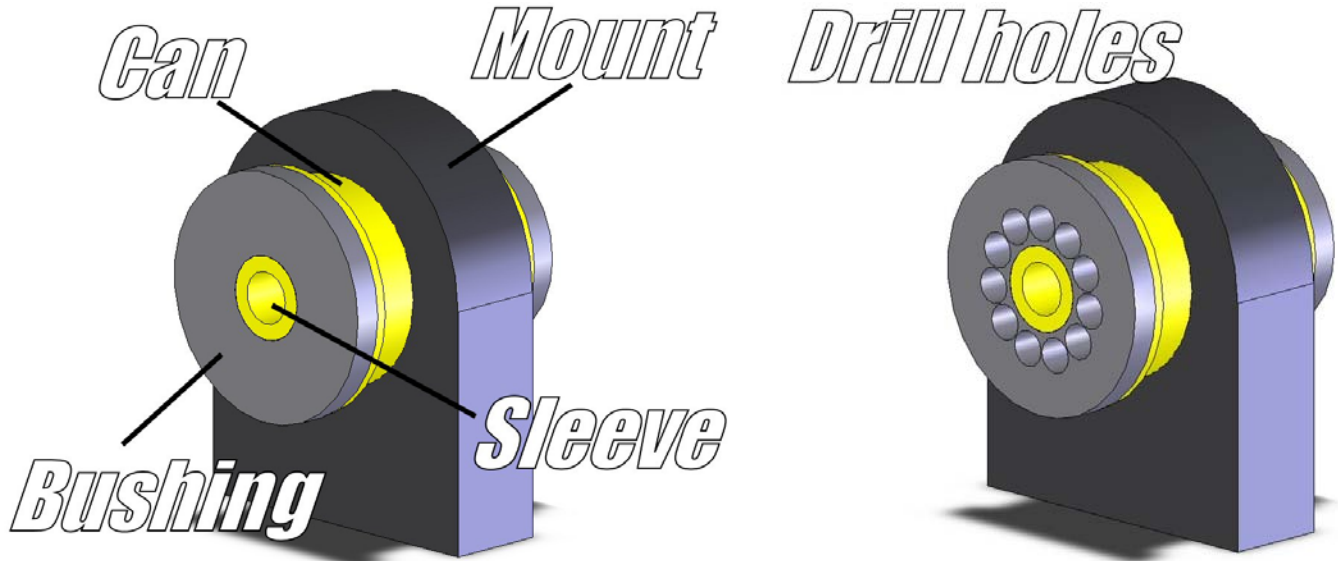


6. Allow the differential to droop as far down as possible.

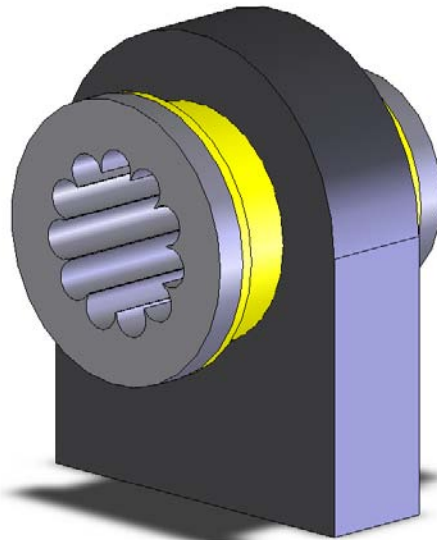
7. Remove the stock upper trailing arms.



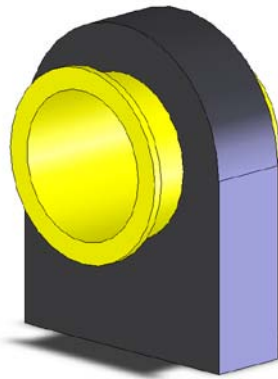
8. Now here comes the difficult part; removing the stock Can Bushings. These are the bushings that connect the aft end of the upper trailing arms to the differential. You may luck out and be able to hammer them out with a dead blow hammer, but if you are not able to use this method please do the following.
- First step is to drill out the rubber bushing. Drill a sequence of holes in a circular pattern in the rubber.



- Once the rubber surrounding the inner metal sleeve is pretty much drilled out, you should be able to punch out the metal sleeve.

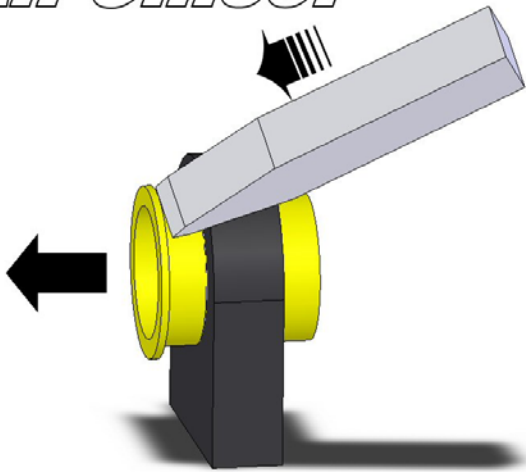


- Scrape or pull out the remaining rubber in the bushing can. All that should be left is the metal can



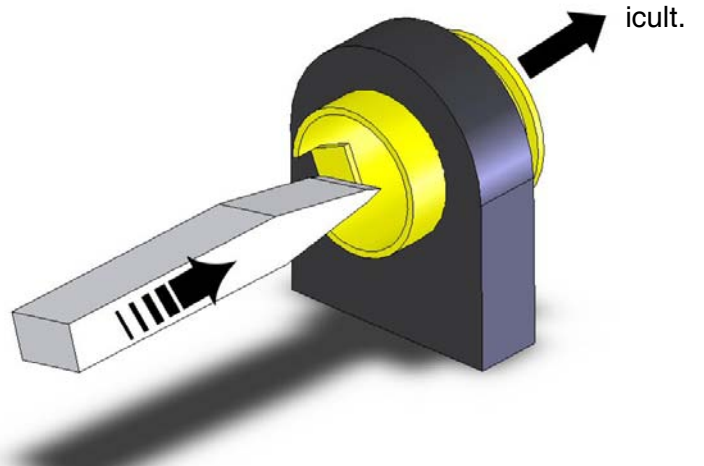
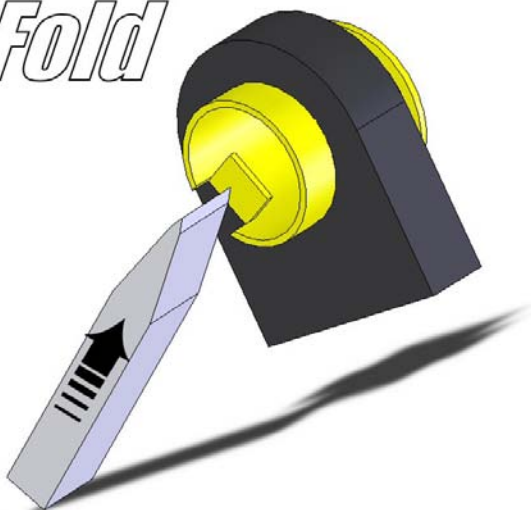
- Soak the entire can with some good penetrating oil. Let it sit for about 20-30 minutes.
- Grab your trusty air chisel and hammer away at the flange in the direction of extraction.

Air Chisel



- If the flange begins to tear or bend then it may necessary to chisel the other end of the can to fold the edge over. This way you have something to chisel onto in the direction of extraction.

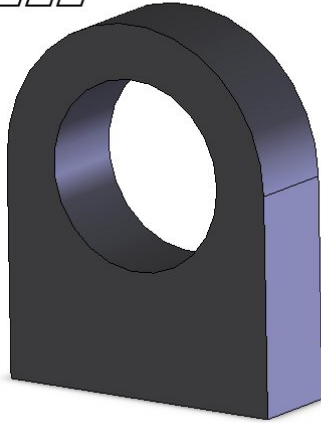
9. *Fold*



Clean

&

oil



INSTALLING NEW UPPER TRAILING ARMS

10. The new polyurethane can bushings come pre-assembled, but it is easier to install the new can bushing with the polyurethane bushing out of the metal can. So, the bushing will have to be pressed out.

- First, set the bushing (flange down) in a vise. See picture. Notice the flange sits on top of the vise. It is not compressed in the vise.



- Using a dead blow hammer, smack the bushing downward until the bushing is level with the metal edge.





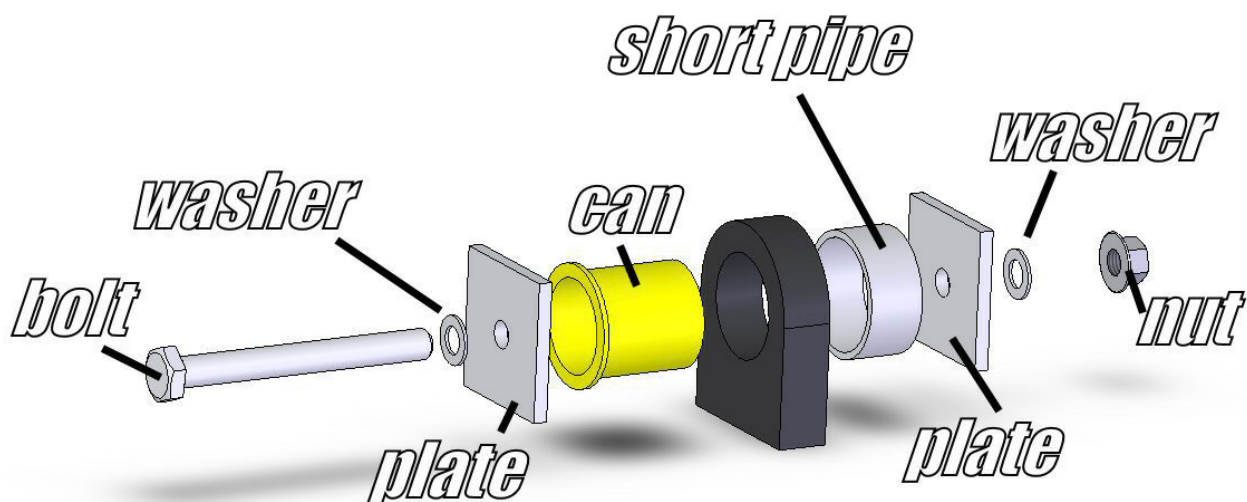
11. Normally with enough room, you can place the bushing can in the differential mount and hammer it in with a flat piece of wood. But, if there isn't enough room, then you will have to fabricate your own press tool. This is not as hard as it sounds.

Home made press materials:

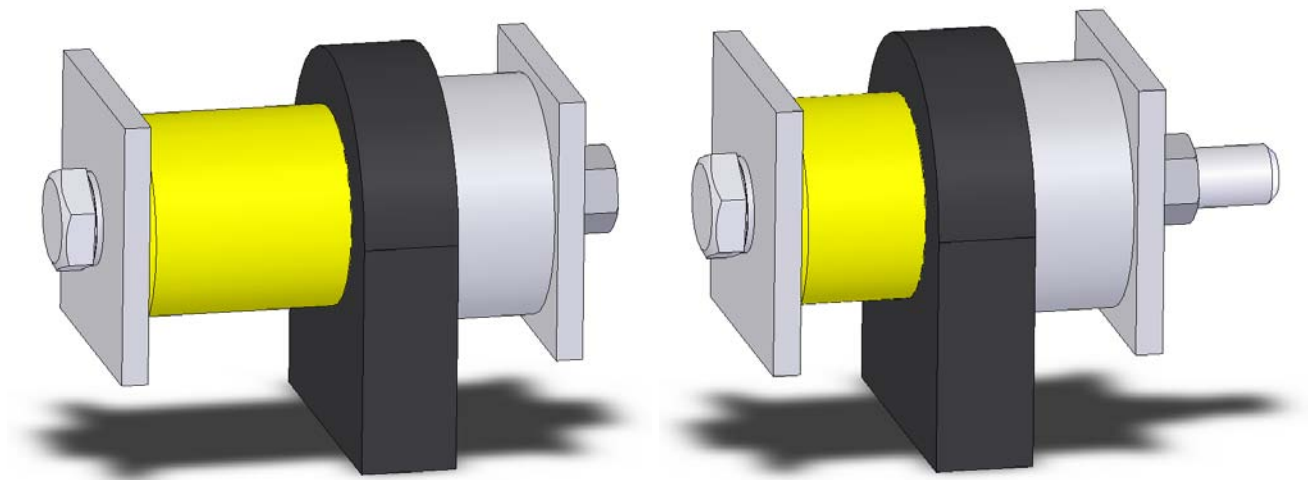
- (2) steel plates (2 ½" x 2 ½" x ¼" thick)
- (2) 2" ID metal pipe (≈1" long "short", ≈ 2" long "deep")
Note: these lengths may vary based on your bolt thread length
- (1) ½" Bolt 5" long Grade 8
- (1) ½" Nut Grade 8
- (2) ½" Washers Grade 8

You should be able to find these supplies at your local hardware store.

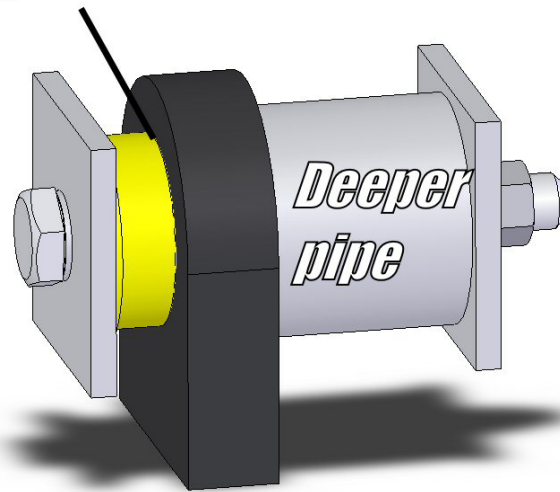
Assemble the materials as shown in the diagram.



Use a ¾" wrench to hold the nut and a ¾" socket to tighten the bolt. The bolt may eventually run out of thread. When this occurs, you can replace the short pipe with the deep pipe.



Stop at Crease



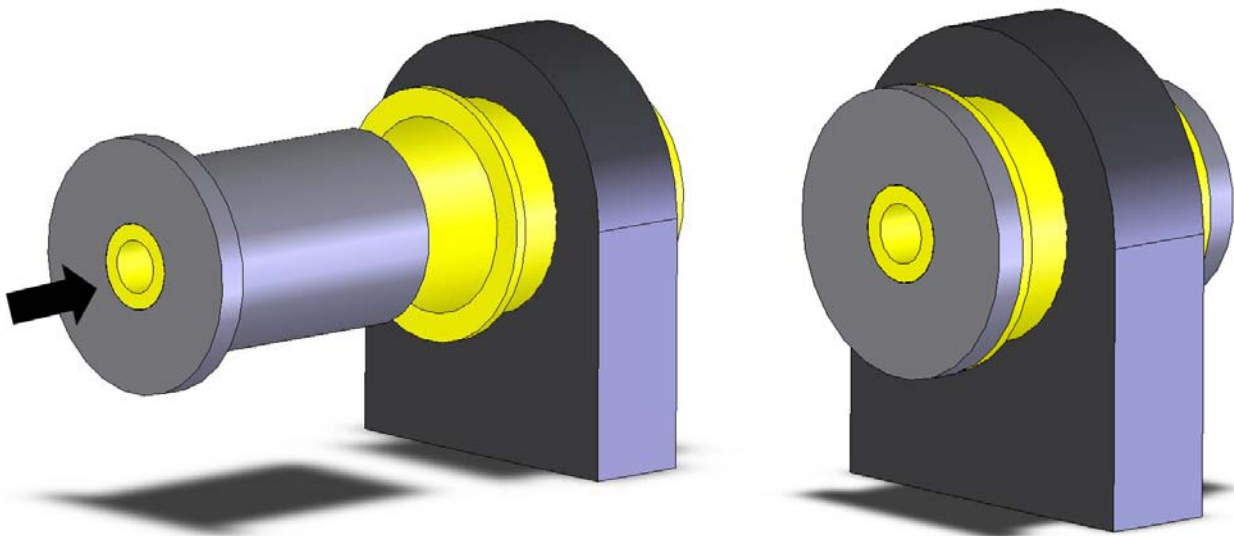
Press the metal can in until it reaches the crease.



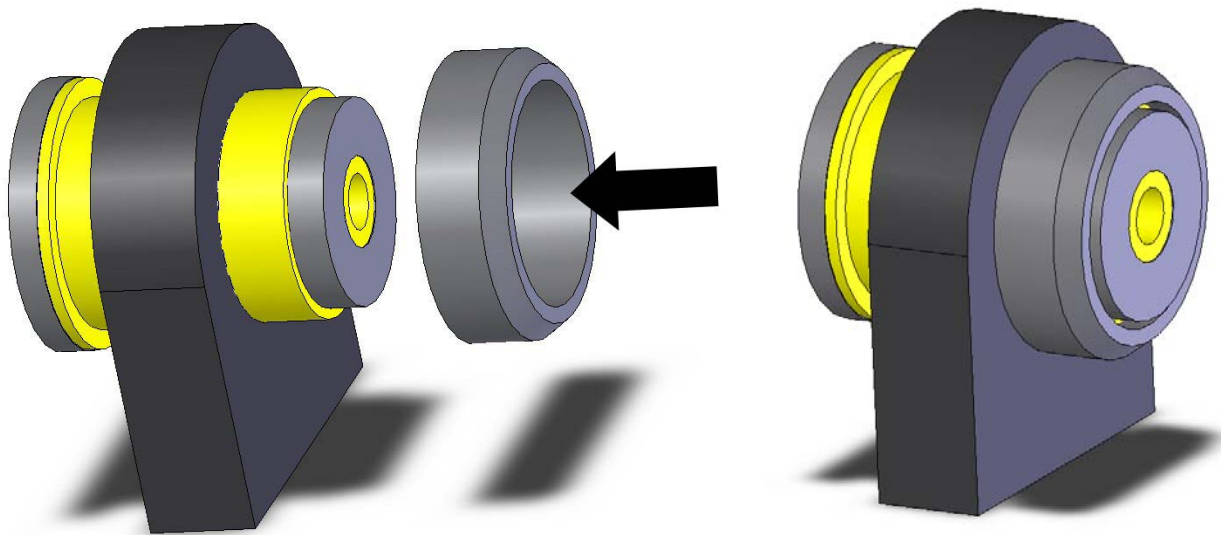
Important Note: On 12-bolt differentials, you cannot use the homemade press method. This is because the thrust bushing (see step 13) needs to be installed onto the can just before the can is fully pressed in. The thrust washer also needs to be shaved down in order to clear the differential housing. In this instance, use a dead blow hammer to smack the can into the mount hole.



12. Once both cans are pressed in, lube the polyurethane bushings and push them into the can in the same manner. You may need to use a dead blow hammer or large channel locks to get the bushing in all the way.



13. Install the thrust washer onto the unflanged side of the can.



12. Install your new Hotchkis adjustable upper trailing arms in the same manner as the stock removal. Make sure the grease fittings on the front end are facing downward. Use all new hardware provided in your kit.



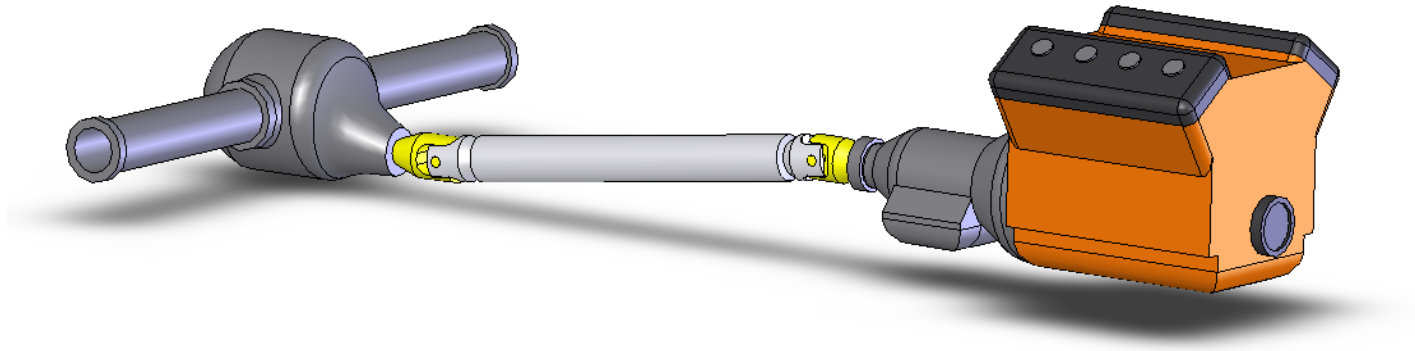
14. Reinstall the rear shocks and sway bar.

15. Make sure all hardware is fully tightened.

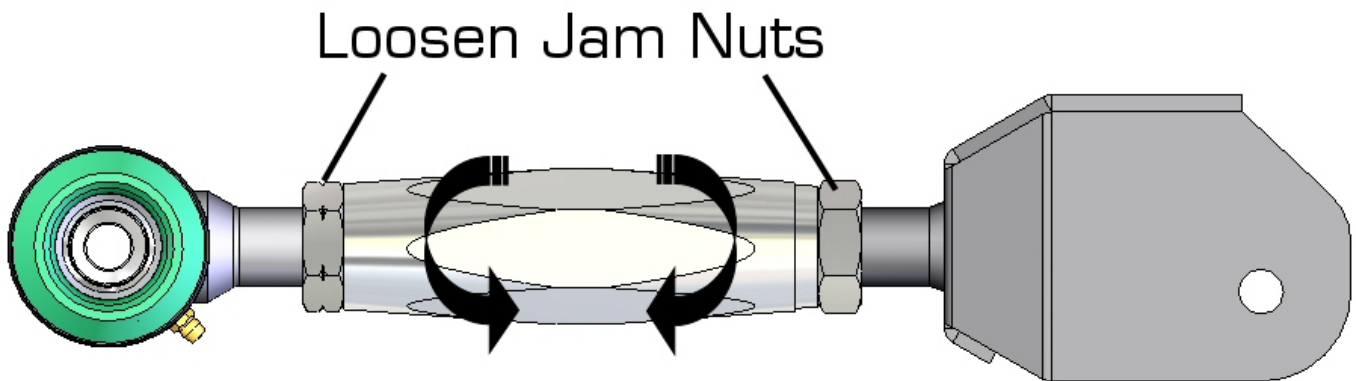
SETTING PINION ANGLE

It may be necessary to set pinion angle after installation of your new Hotchkis upper trailing arms.

First of all, what is pinion angle? Pinion angle is basically the angle between the centerline of the differential pinion and the drive shaft centerline. This angle changes during acceleration and braking. If the pinion angle is excessive, then vibration and increased U-joint wear will occur.

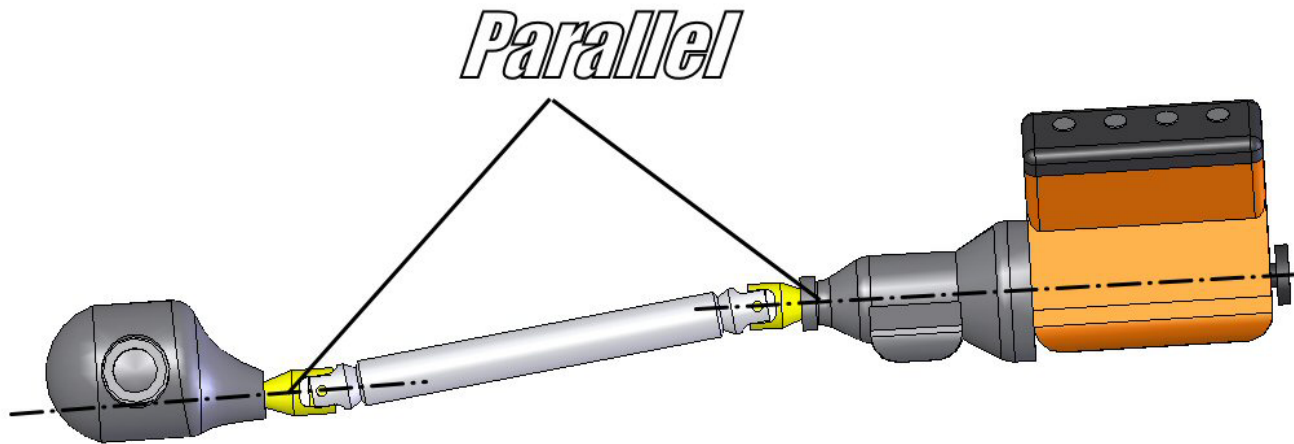


The Hotchkis double adjustable trailing arms allow you to adjust the pinion angle with ease. Simply loosen the two jam nuts and rotate the aluminum turnbuckle to lengthen or shorten the arm. So, how does one set the pinion angle?



The simplest rule of thumb is:

The centerline of the differential pinion should be parallel to the centerline of the engine's crankshaft without being the same line.



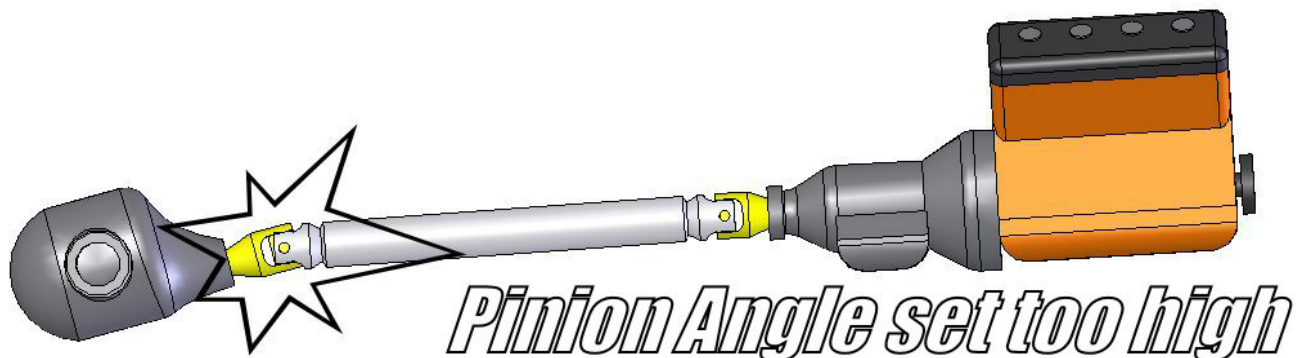
FYI... The centerlines should not be the same line because the U-joints would wear in the same areas all the time. Having an angle at the joint itself allows the joint to articulate and wear evenly along the entire bearing race.

So, the first thing to do is to find out the angle the engine's crankshaft is sitting at. One way to do this is to set a digital angle finder on the front crank pulley or harmonic balancer. Record this angle. Next, set the digital angle finder on the front flat face of the differential yoke. This angle needs to be the same as the recorded crank angle. Adjust your Hotchkis trailing arms to obtain the angle needed.

Tighten all hardware and drive the car. Test for driveline vibration by accelerating.

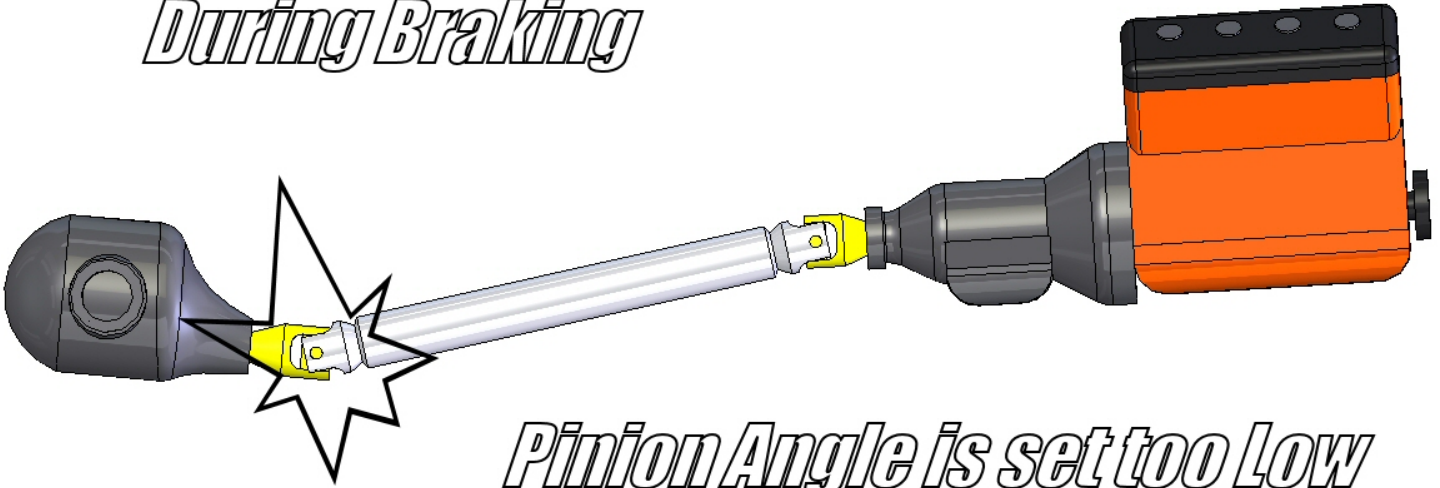
If there is vibration during acceleration, then the pinion angle is set too high!

During Acceleration



If there is vibration during braking, then the pinion angle is set too low!

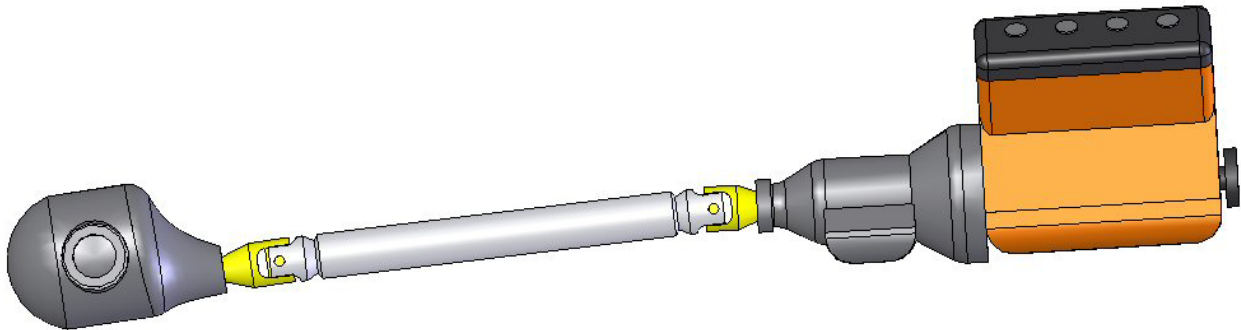
During Braking



Pinion Angle is set too Low

Fine tune your Hotchkis trailing arms to achieve the perfect setting for your driving style and horsepower.

During Acceleration



Adjusted Pinion Angle



INSTALLATION INSTRUCTIONS

1301 / 1302 / 1305 / 1306

THANK YOU FOR CHOOSING HOTCHKIS PERFORMANCE PRODUCTS

Removal of Stock Lower Trailing Arms

- 1) Place car on level surface.
- 2) Support rear of the car on jack stands and remove the rear wheels.
- 3) Remove the rear sway bar. (if car is equipped-not required on Camaro/Firebird)
- 4) Place a floor jack under the differential and lift up slightly to remove tension from the trailing arm bolts-make sure not to lift the car off the jack stands.

KEEP THE FLOOR JACK UNDER THE CAR DURING THE COMPLETE REMOVAL AND INSTALLATION PROCEDURE.

CAUTION- DO NOT REMOVE BOTH TRAILING ARMS AT THE SAME TIME OR THE AXLE WILL ROTATE AND THE TRAILING ARM INSTALLATION WILL BECOME MUCH MORE DIFFICULT.

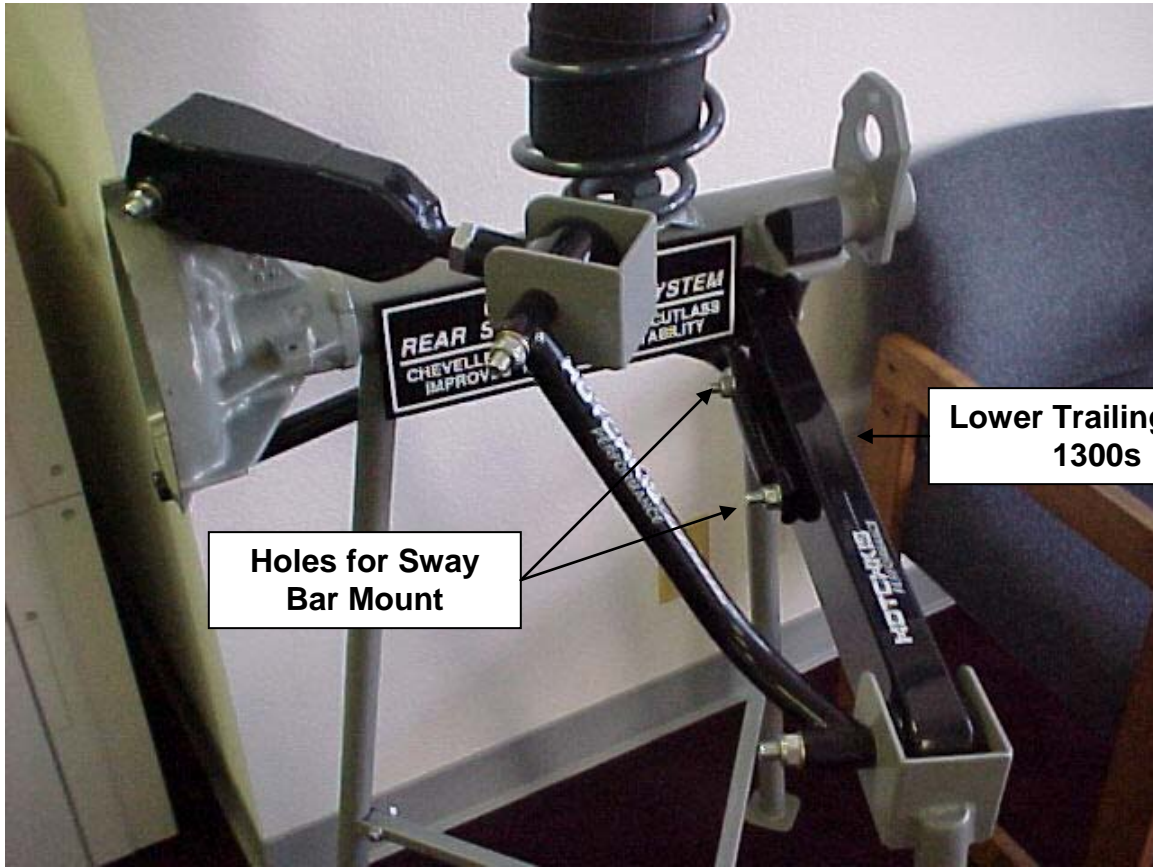
- 5) Start with either lower trailing arm and remove the rear bolt.
- 6) Then remove the front trailing arm bolt using a socket with an extension-place the socket through the outer hole in the frame to loosen the nut (Does not apply to F body). **Caution** – be careful not to drop the bolt into the frame – if you do then remove the bolt through the large hole on the underside of the frame.
- 7) Remove the unbolted trailing arm.
- 8) Clean the frame at the trailing arm pivot area with a wire brush.

Installation of HP Lower Trailing Arms

Hotchkis performance trailing arms are fully assembled, greased and ready to install.

- 1) Apply a thin layer of chassis grease to faces of bushings before installation.
- 2) Install HP trailing arms with the grease fittings facing down and the sway bar mounting holes toward the **rear** of the car.
- 3) Install the new trailing arm by locating the front bolt first.
- 4) Place one drop of blue **Loctite** on clean threads and torque the nut to 70 ft./lbs.
- 5) The trailing arm should then pivot smoothly on the chassis.
- 6) Install the rear bolt.
- 7) Place one drop of blue **Loctite** on clean threads and torque nut to 70 ft./lbs.
- 8) Install the rear sway bar using the stock or supplied bolts. (7/16" on early models-10mm late models 78 on) (1305 trailing arms have supplied hardware) **Does not apply to F body.**

- 9) Place one drop of blue **Loctite** on clean threads and torque sway bar nuts to 35 ft./lbs.
Note: **Loctite** not needed if using new Hotchkis Performance hardware.
- 10) The holes located on the Hotchkis Performance lower control arms are for the mounting of our sway bar.



⁺ HOTCHKIS SPORT SUSPENSION

1401 / 1402 / 1403 ADJUSTABLE TRAILING ARM MOUNT BRACES

1401 – 78-88 GM A/G-BODY / 1402 – 68-72 GM A-BODY / 1403 – 64-67 GM A-BODY

INSTALLATION OF HOTCHKIS PERFORMANCE ADJUSTABLE TRAILING ARM MOUNT BRACES

ALWAYS USE CAUTION! - AND MAKE SURE THE CAR IS SECURE ON JACK STANDS.

- 1) Place the vehicle on a level surface. Block the front tires.
- 2) Use a jack to lift the rear of the car until the suspension is at full droop and the tires are no longer contacting the ground. Support the rear of car on jack stands.
- 3) Place the jack under the differential. This will be used later to lower or raise the axle for ease of installation.
- 4) Use a ratchet or wrench to remove rear shock absorbers at the lower mounts. This should free up the springs to be removed.

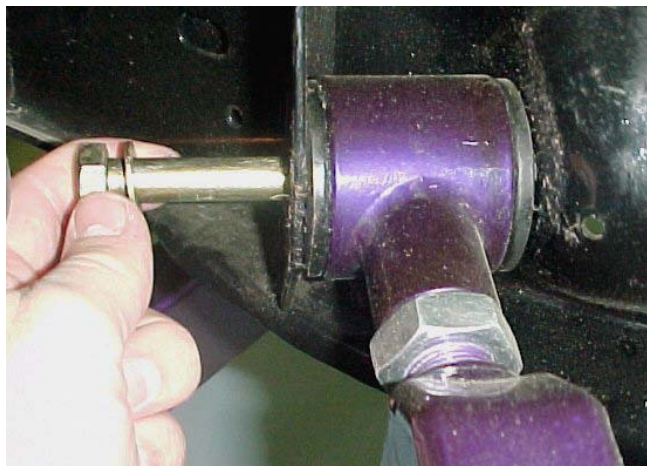


- 5) Using the jack placed under the differential, raise the rear suspension to its approximate ride height. The braces are generally easier to install with the rear axle at its normal ride height position to the frame.

NOTE: Be careful not to unload the weight of car off the jack stands.

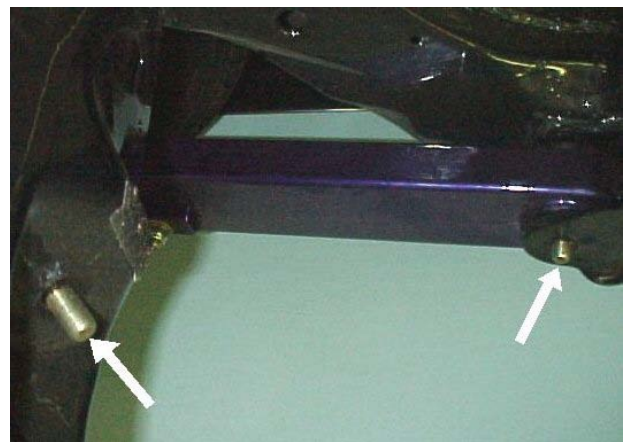
To keep the axle from rotating, **install one brace at a time.** **Do not** have trailing arm bolts removed from opposite sides at the same time.

- 6) Remove one front upper trailing arm bolt and replace with supplied longer bolt and washer. Push bolt through trailing arm until about 1/2" of thread is showing. A short amount of thread makes it easier to slide the brace onto the bolt.



NOTE: If the emergency brake cable covers the upper trailing arm bolt, then this cable will have to be moved slightly. Do this by removing the cable bracket bolt just above the pinion. Push the cable aside for the brace clearance.

- 7) Repeat step 6 for the front bolt of the lower trailing arm. Access to this bolt should be through a hole in the outside of the frame that can be reached with a socket and ratchet extension.



These pictures were taken on a bare frame for reference.

- 8) The brace can now be installed by sliding it over the bolts. The braces connect the upper and lower trailing arm frame mounts as indicated by the arrows in the photo from step 7. The longer section of the brace fits next to the lower trailing arm.



NOTE: For 78-88 models (part #1401) the curved section fits next to the lower trailing arm between the rear seat pan and the frame cross-member as shown in the photos below.



- 9) Adjust the length of the brace as necessary. Loosen the jamb nut on the brace with 15/16” wrench to allow the head to move. Rotate the head **clockwise to shorten** the brace or **counter-clockwise to lengthen** the brace until it fits over the ends of the bolts. The brace ends should fit almost flush to the frame with the bolts fully extended through the ends.



YOU WILL NOT, be able to determine if you have the right brace length until you have fully extended the bolts and the brace fits without causing the hardware to bind.

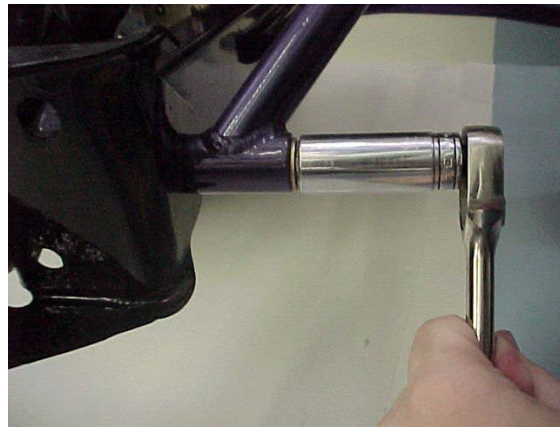
Hand-tighten the jamb nut on the brace. Place the washers included over the bolt ends and start the nylock nuts on the bolt ends to make sure the bolts don't pull out, and move on to the next step.

Special Note (68-72 Models): Due to tolerances in these models it may be necessary to clearance the floor pan to fit these braces. Use a body hammer to clearance the floor pan from the braces.

- 10) Repeat the installation & adjustment procedures for the opposite side.

- 11) Once the braces are installed, place one drop of ***Loctite*** on the trailing arm bolt threads. Tighten the washers and nuts. Torque the nuts to 60 ft./lbs. You may have to use a wrench and socket together to keep the hardware from spinning.

NOTE: If using rubber trailing arm bushings, then raise the differential to approximate ride height and tighten the trailing arm bolts. Polyurethane equipped trailing arms can be tightened at full suspension droop.



- 12) Use the 15/16" wrench from before to tighten the jamb nut on the brace.
- 13) Replace the brake cable if it was moved earlier.
- 14) Re-install the springs and bolt the shocks back into place. **CHECK THAT ALL HARDWARE IS TIGHT!** Lower the jack from the differential and remove the jack. Use the jack to remove the jack stands supporting the rear of the vehicle. Remove the blocks from the front wheels and you're done with the installation!

CHECK ALL NUT AND BOLT TIGHTNESS AFTER FIRST 10 MILES

