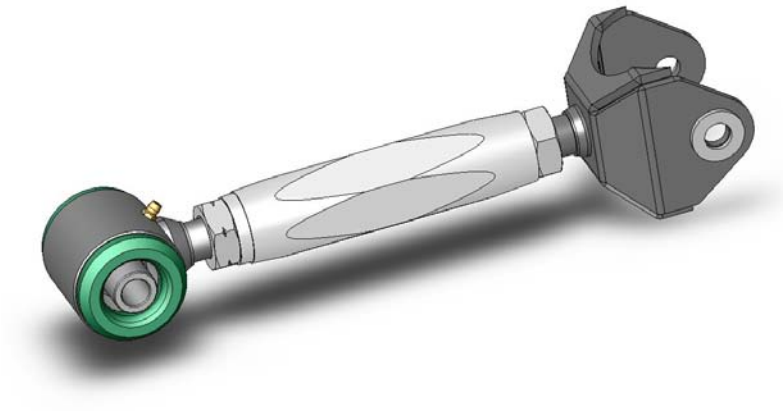
HOTCHKIS SPORT SUSPENSION

1209A
78-96 GM B-BODY
Double Adjustable Trailing Arms



Warning: This installation should be performed by a trained professional.

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 hydrailic tranny jack.

4. Remove the rear shocks.
   Upper mounts: 10mm and 13mm socket/wrench for bolt and nut
   Lower mounts: 19mm socket/wrench for nut

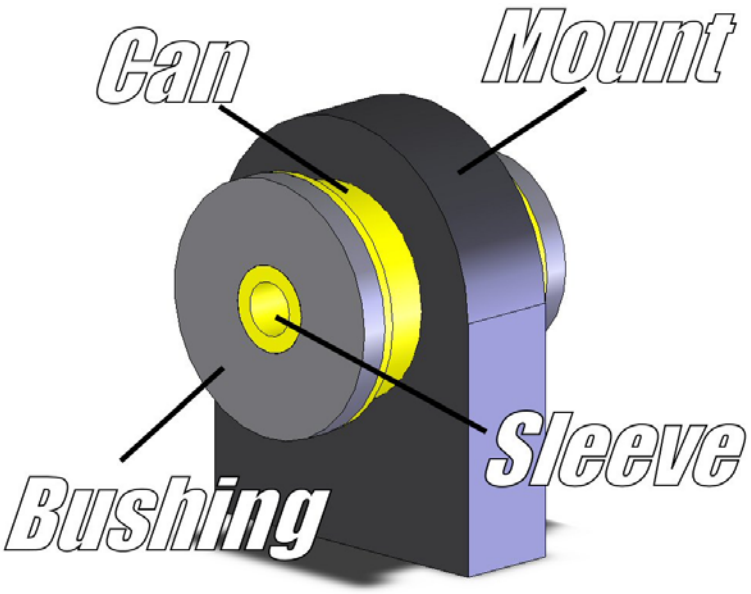
5. Remove the rear swaybar from the lower trailing arms.
   Trailing arm mounts: 15mm socket/wrench for nuts

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

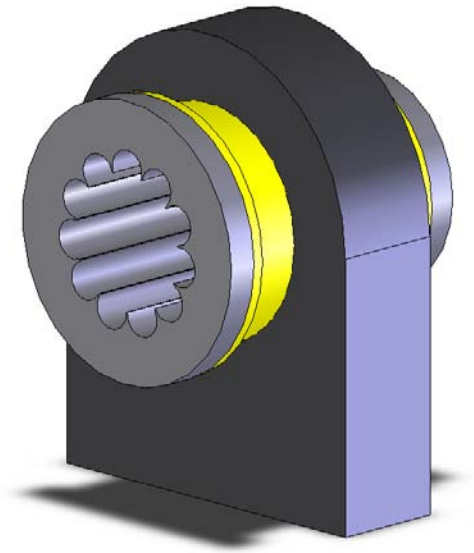
7. Remove the stock upper trailing arms.
   Fore mount: 21mm socket/wrench for nut & bolt
   Aft mount: 18mm socket/wrench for nut & bolt

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.

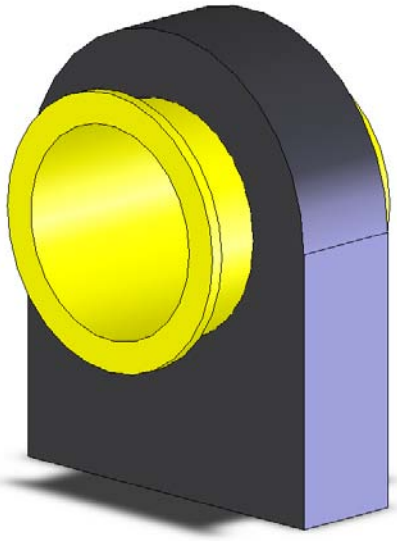
   - First step is to drill out the rubber bushing. Drill a sequence of holes in a circular pattern in the rubber.



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



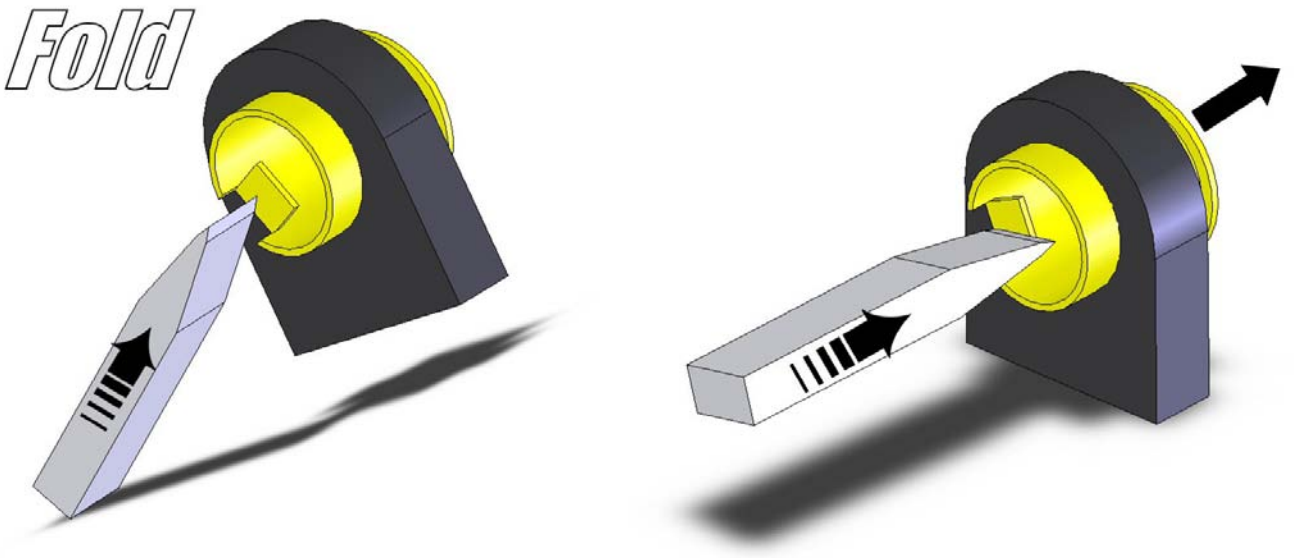
- Scrape or pull out the remaining rubber in the bushing can. All that should be left is the metal can



- 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.

- 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. Next, clean the differential mounts and make sure there are no burrs that will make reinstallation difficult. Soak the holes with penetrating oil to aid re-insertion of new can.

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.

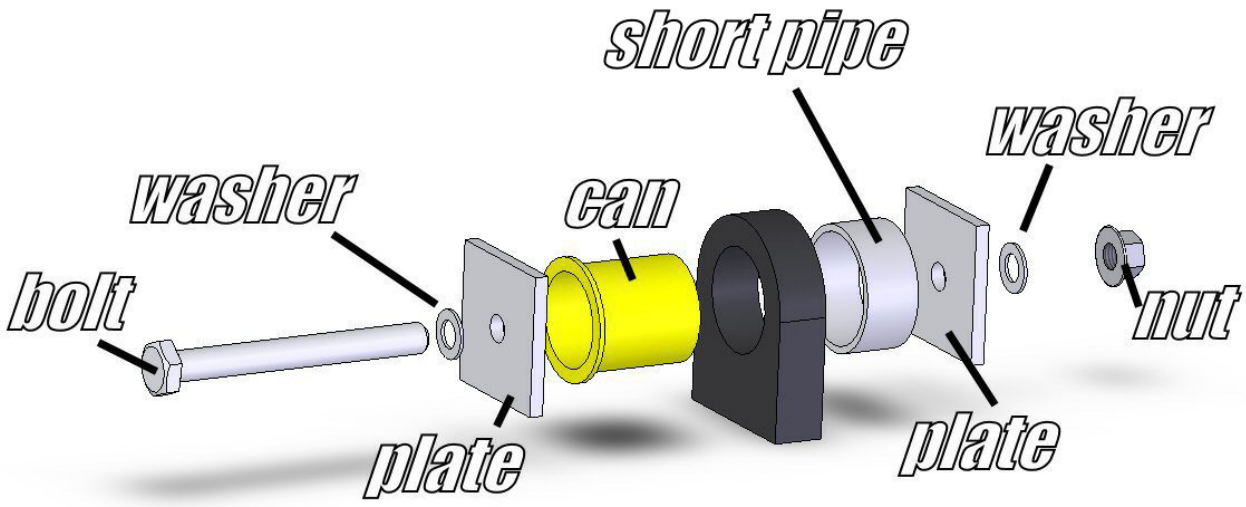
- Grab a large deep socket and use it as a punch to hammer the rest of the bushing out.

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.

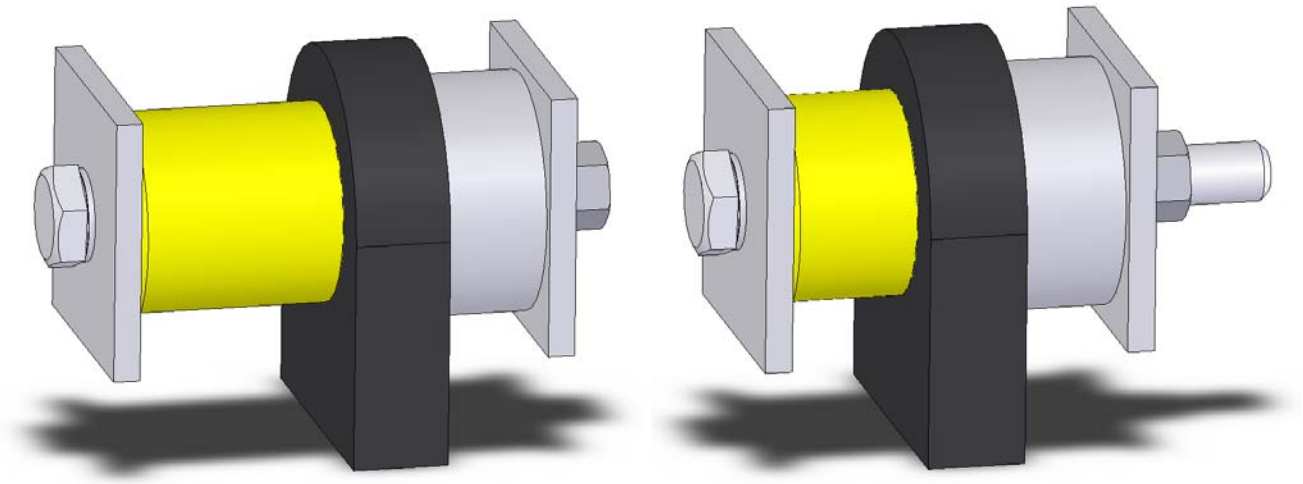
    Home made press materials:
    - (2) steel plates (2 ½" x 2 ½" x ¼" thick)
    - (2) 2" ID metal pipe (≈1" long "short", ≈ 2" long "deep")
      Note: these lengths may vary based on your bolt thread length
    - (1) ½" Bolt 5" long Grade 8
    - (1) ½" Nut Grade 8
    - (2) ½" Washers Grade 8

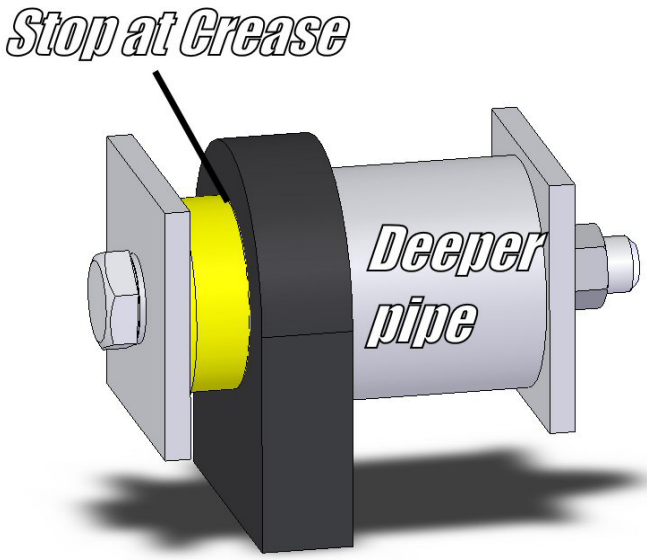
    You should be able to find these supplies at your local hardware store.

    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.

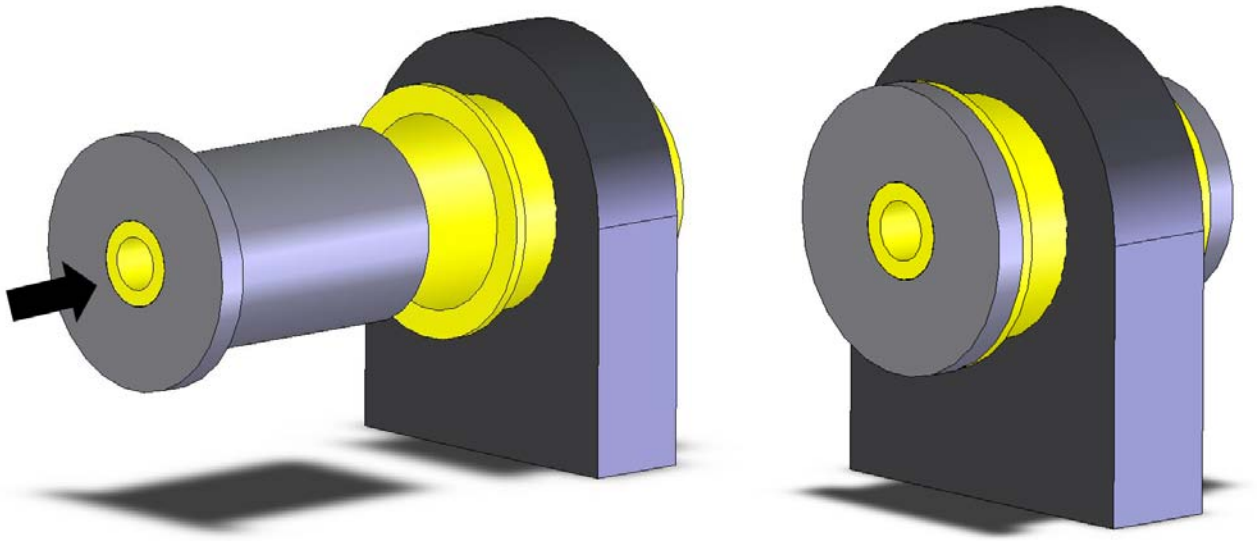




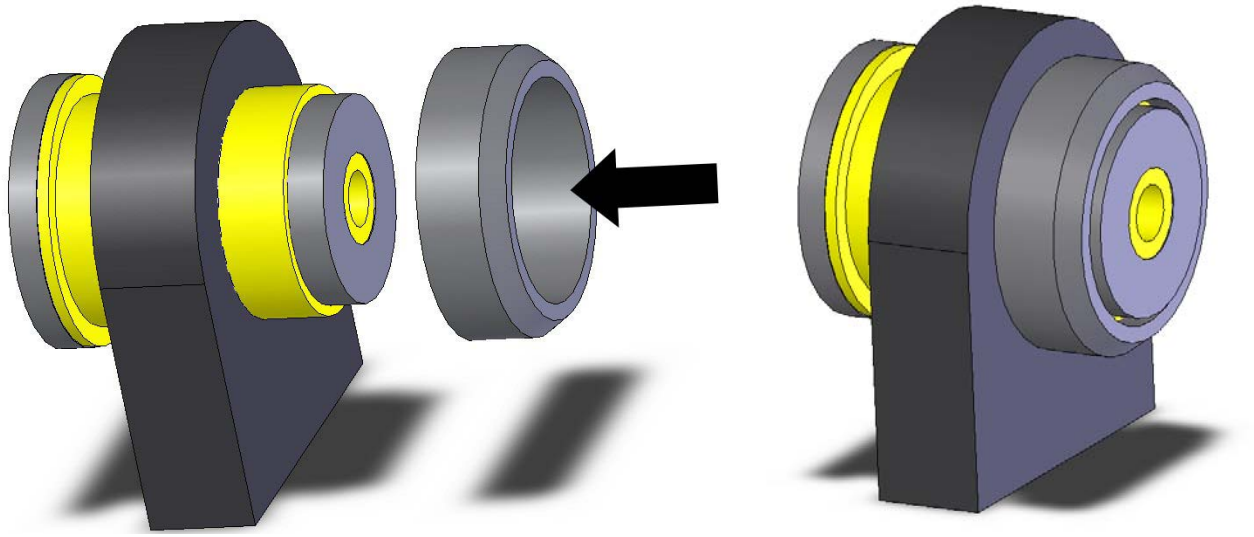
Press the metal can in until it reaches the crease.

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.

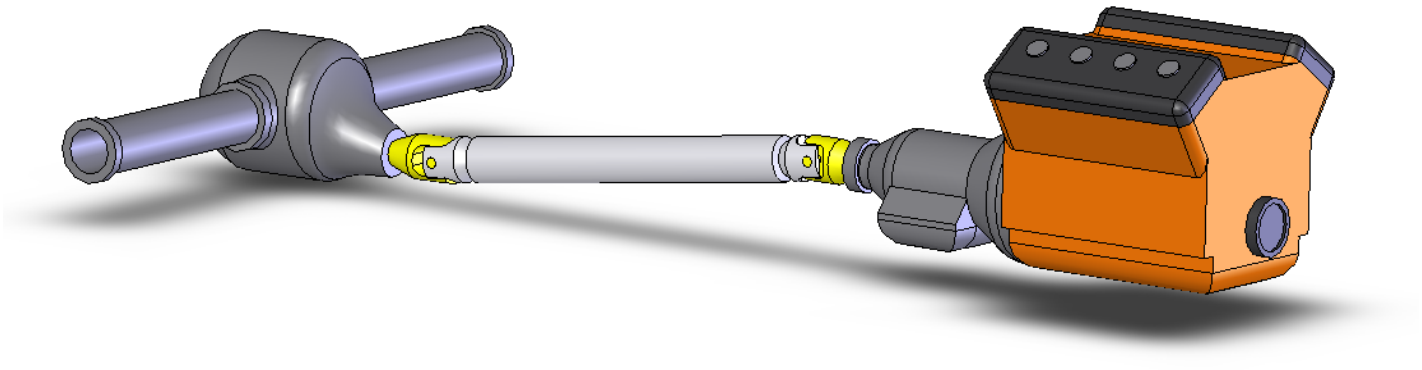
14. Reinstall the rear shocks and sway bar.

15. Make sure all hardware is fully tightened.

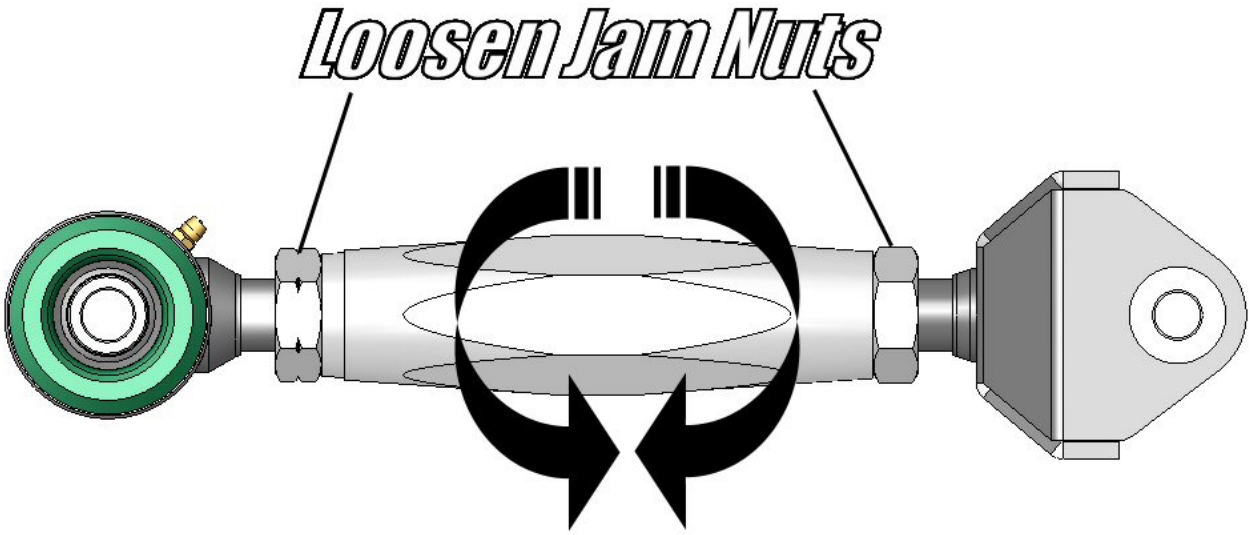
SETTING PINION ANGLE

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.

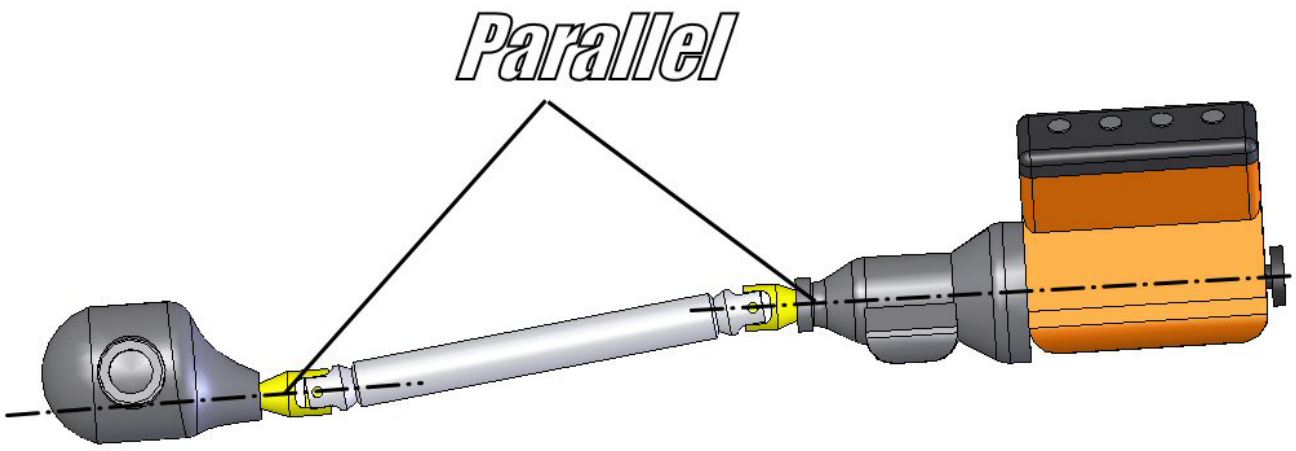


The Hotchkis double adjustable trailing arms allow you to adjust the pinion angle with ease. Simply loosen the two jam nuts and rotate the aluminum turnbuckle to lengthen or shorten the arm. So, how does one set the pinion angle?



The simplest rule of thumb is:

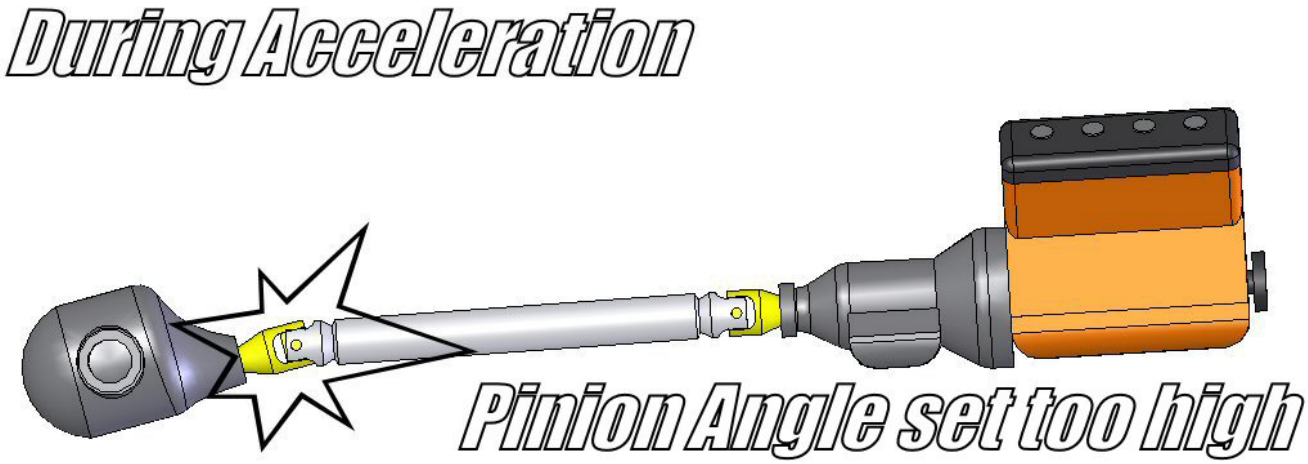
The centerline of the differential pinion should be parallel to the centerline of the engine's crankshaft without being the same line.



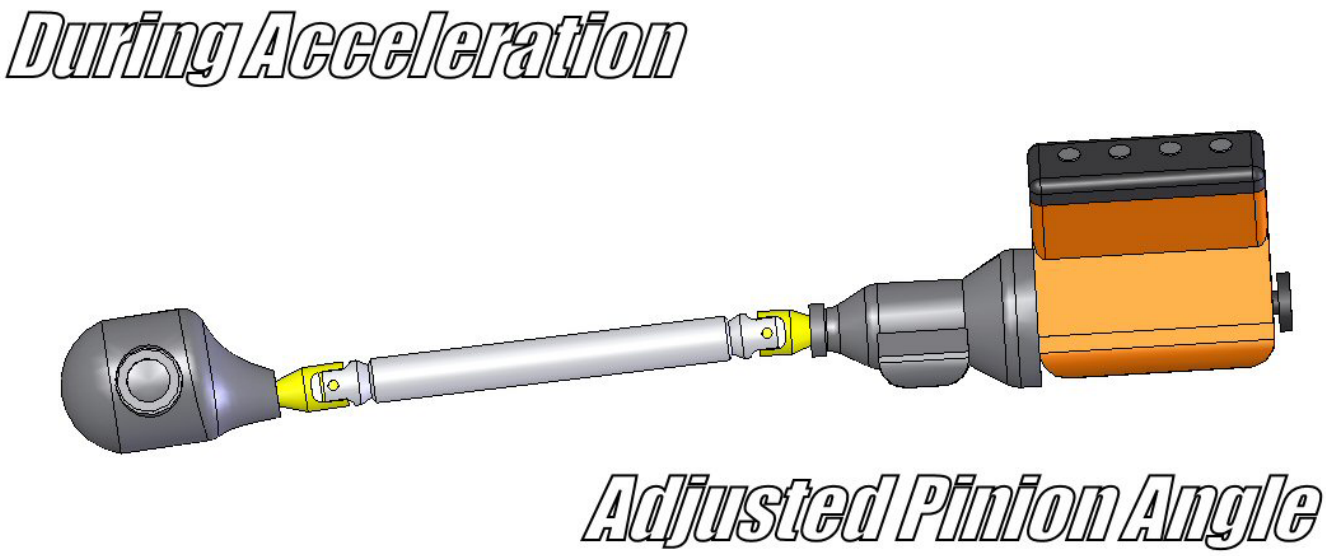
So, the first thing to do is to find out the angle the engine's crankshaft is sitting at. One way to do this is to set a digital angle finder on the front crank pulley or harmonic balancer. Record this angle. Next, set the digital angle finder on the front flat face of the differential yoke. This angle 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!



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



HOTCHKIS
SPORT SUSPENSION

1209A
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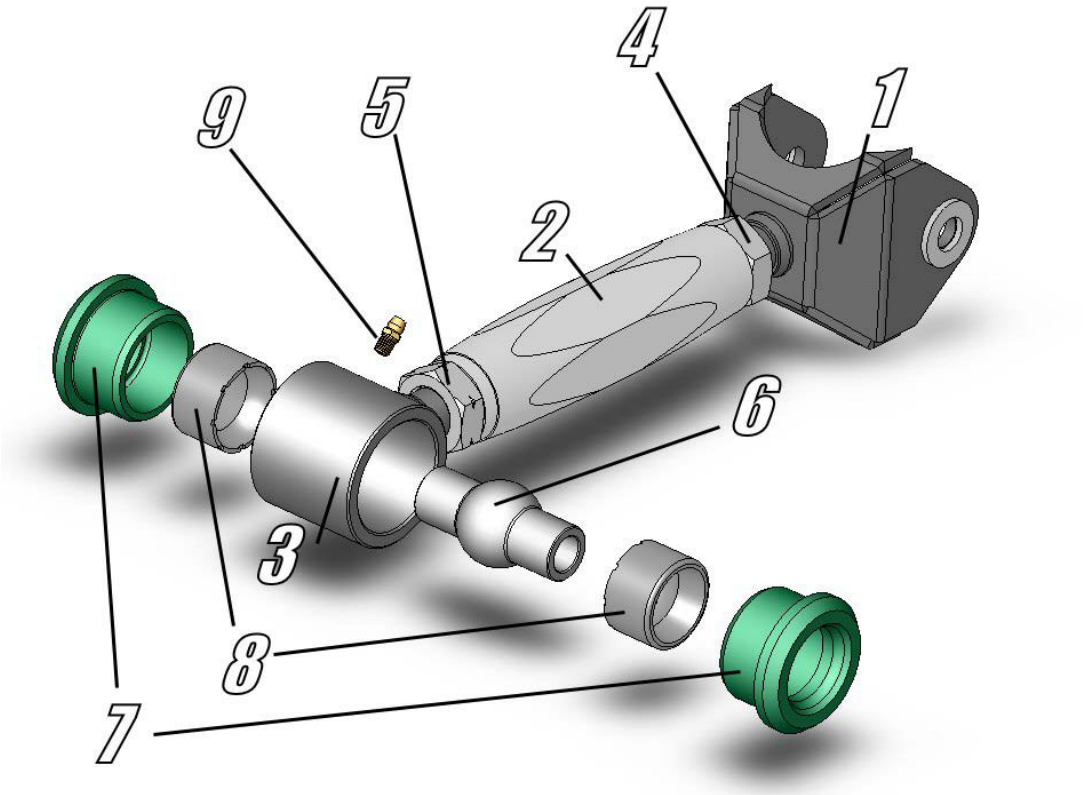
Double Adjustable
Trailing Arms

	Hotchkis P/N	Item Description	Quantity
1	12610147	Clevis End	2
2	12490147	Aluminum Turnbuckle, Impala Xtend	2
3	12510152	Bushing End	2
4	7/8-14 JAM	7/8"-14 Right Hand Jam Nut	2
5	7/8-14 LTJAM	7/8"-14 Left Hand Jam Nut	2
6	16490147	Ball Pivot Sleeve (15.237)	2
7	21490147	Ball Pivot Bushing (2255G)	4
8	77410006	Ball Pivot Liner, Delrin	4
9	7201	Zerk Fitting, Short	2
10	GC-5B	Black Grease Cap	2
11	3230GA	Can Bushing, B-Body	2
12	3231G	Thrust Washer, B-Body	2
13	1715	Hardware Kit	1
14	9.11108	Grease Pack	2



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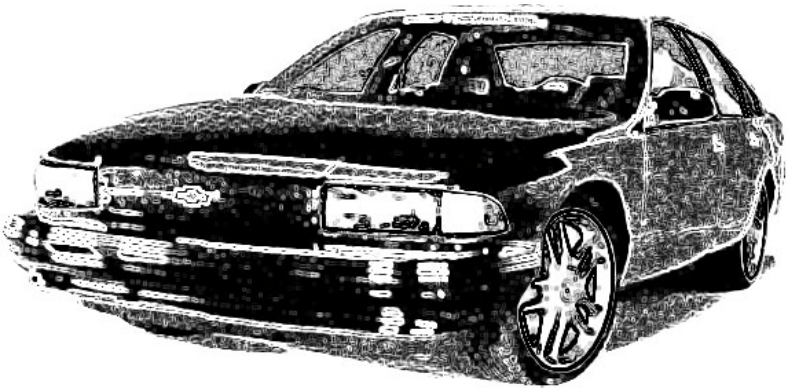


1309-1811 Impala X-Tend Rear Suspension Package Installation Instructions

Lower Trailing Arm Installation

1) Place vehicle onto level surface. Block the front tires to prevent the vehicle from rolling.
2) Support rear of car on jack stands and remove rear wheels.
3) Place floor jack under differential and lift-up slightly taking the tension away from trailing arm bolts - be sure not to lift vehicle off of jack stands.
4) Remove the lower rear shock bolts.
5) Remove both lower shock studs from the rear end brackets.
6) Lower rear end with the floor jack until you can remove the rear springs from the vehicle.

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

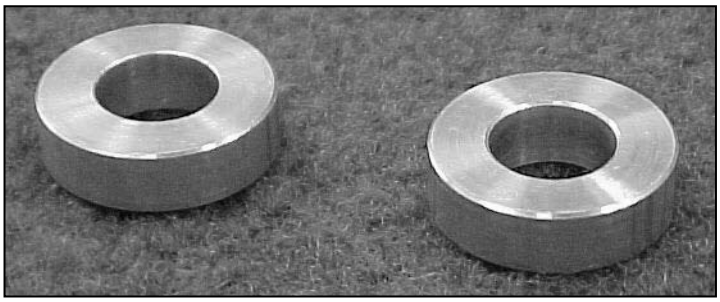
CAUTION- DO NOT REMOVE BOTH TRAILING ARMS AT THE SAME TIME OR THE AXLE WILL ROTATE AND THE TRAILING ARM INSTALLATION WILL BECOME MUCH MORE DIFFICULT.

7) Only work on one trailing arm at a time.
8) Jack up the rear end till you can easily remove the rear trailing arm bolt.
9) 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. 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.
10) Remove the stock trailing arm from the vehicle.
11) Clean the brackets with either sandpaper or emery cloth.

12) Apply a thin layer of chassis grease to faces of bushings before installation.
13) Install HP trailing arms with the grease fittings facing down and the sway bar mounting holes toward (offset) the rear of the car.
14) Install the new trailing arm by locating the front bolt first.
15) The trailing arm should then pivot smoothly on the chassis.
16) Pivot the arm and install the rear bolt. You may have to pry on the rear end to install the longer arm, since the new Hotchkis arm in ½" longer then stock.
17) Once installed, torque all four bolts to 70 ft./lbs.
18) Install the rear sway bar using the supplied bolts.
19) Torque sway bar bolts to 35 ft./lbs.
20) Repeat procedure for other lower control arm.

NOTE: This is a really good time to replace the rear shock absorbers!

21) Jack up the rear end until the lower shock studs line up with the brackets.
22) Take the two supplied aluminum shock spacers and install between the shock and the rear end bracketry.



23) Tighten the shock nuts.
24) Reinstall the wheels and torque to factory specifications.

ADJUSTMENT OF THE PINION ANGLE USING THE HOTCHKIS ADJUSTABLE UPPER CONTROL ARMS

1) Once it has been determined that the pinion angle in your vehicle needs adjustment, you will then need to decide if that angle must be adjusted up or down.
2) To accomplish this, remove one stock upper control arm and measure the distance between the mounting holes. **(from center to center)** Write this measurement down! ***NOTE - The Hotchkis adjustable arms are pre-set at ½" longer than stock upper arm center to center length. One rotation (360deg.) of the female end, will equal approx. 1/2deg. One half of a rotation (180deg.) of the male end will equal approx. 1/4deg.**
3) If the pinion angle needs to be adjusted **downward**, the upper arm hole-to-hole distance must be **shorter** than it currently is in the car.
4) The Hotchkis adjustable arms can be **shortened** 3 turns shorter or 7/32" or .218". If a shorter arm is required, 1/4" of the threaded portion can be ground.
5) If the pinion angle needs to be adjusted **upward**, the upper arm hole-to-hole distance must be **longer** than the current distance.
6) The Hotchkis adjustable arms can be **lengthened** 10 turns or 1/2" or .500"

IMPORTANT! There MUST be a minimum of 1/2" of thread engagement into the head for maximum strength!

IMPORTANT! The jam-nut MUST be tight before usage. Then, re-torque jam-nut after first use.