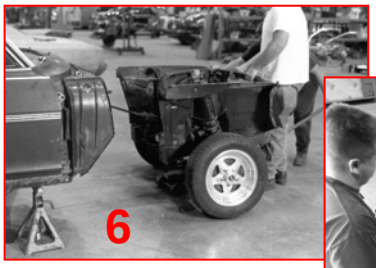
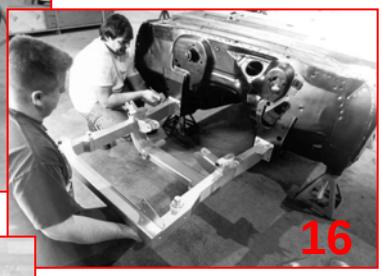
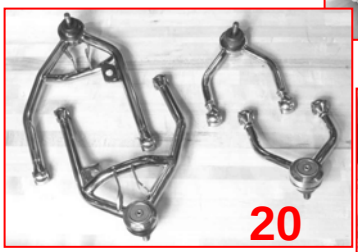
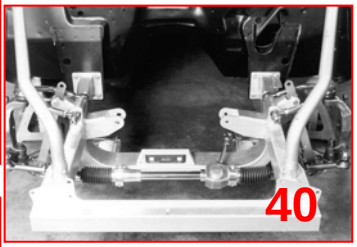
# INSTALLATION GUIDE

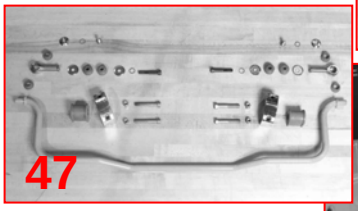
## 62-67 Chevy II Bolt-On A-Arm Clip

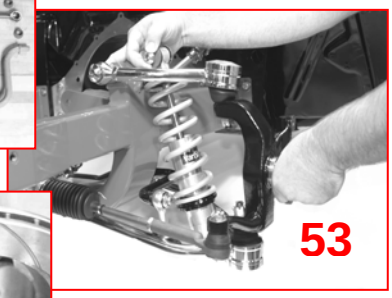


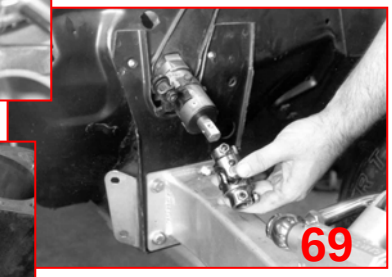



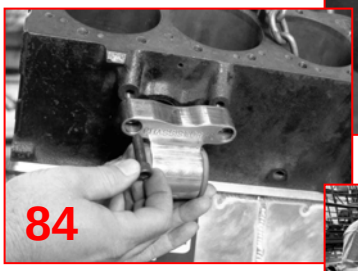



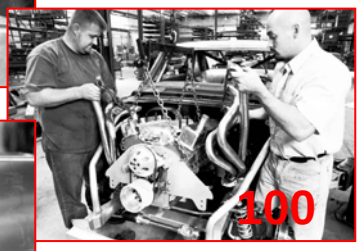








# CONGRATULATIONS

You have purchased the finest bolt-on Chevy II front frame available. We hope you are as excited about installing it as we were about designing it.

This assembly booklet should guide you through a seamless installation. However, if you have any questions please give our tech line a call at (916) 388-0288. Monday through Friday 7:00 a.m. to 5:00 p.m., Saturday 8:00 a.m. to 1:00 p.m. PST.

Every effort has been made to insure that each component has been boxed correctly. However, we urge you to open each box and verify its contents against the enclosed parts list.

We also suggest that you read this entire assembly booklet before you begin. This will help you become familiar with the project.

Please remember that when you modify a vehicle, you assume all risks. You are changing the structural integrity manufactured into the original vehicle. As such, you need to be cognizant of potential failures. Initially you must conduct a series of short tests in a safe location. Test for handling, steering, and braking at slightly increasing speeds.

Once you are confident the vehicle handles and stops properly, take a series of drives with slightly increasing speeds stopping to check all components. Gradually increase the distance of your drives. Once you have confirmed your installation is road-worthy, you must develop a maintenance program. You must check all components for looseness, and wear and tear on a regular schedule. Your schedule must be more intense and frequent than a regular OEM vehicle.

Chris Alston's Chassisworks would appreciate any feedback regarding your experience during installation and use of this frame.

That said, let’s install!

# Recommended Equipment List

This list will give you a good idea of the necessary tools required to complete this installation. There will be additional items needed.

## Hand Tools

- Adjustable wrench
- Allen wrench set
- Anti-seize compound
- Brakeline wrench
- Center punch
- Clecos & pliers 3/16 size
- Combination wrenches 3/8 to 3/4”
- Dial caliper
- Drill bit size #21(.159)
- Level
- Loctite #242 thread lock
- Philips screwdriver sizes #1 & #2
- Pry bar
- Rotary wire brush
- Socket set 3/8 to 3/4” with 3/8 drive
- Spot weld remover with 7/16” bit
- Steel & plastic head hammers
- Straight blade screwdriver
- Swivel pad vise grip clamps
- Tape measure
- Tap handle small and medium
- Tap sizes: 10-32, 3/8-16, 7/16-14, 1/2-13, 5/8-18

## Shop Equipment

- Floor jack
- Jack stands –quantity 5
- **Digital level**
- Steering wheel puller
- 4 1/2” disk grinder
- 3/8” electric drill

# Torque Specification Chart

| *DESCRIPTION* | *TORQUE* |
|---|---|
| A-arm pivot studs | 50 lb-ft |
| Antiroll bar clamp socket head allens 3/8-16 x 2 1/2” | 20 lb-ft |
| Antiroll bar link eyebolt button head allen 3/8-16 x 3/4” | 20 lb-ft |
| Antiroll bar link eyebolt socket head allen 3/8-16 x 2 1/4” | 20 lb-ft |
| Balljoints | 150 lb-ft |
| Balljoint studs | 105 lb-ft |
| Caliper socket head allens 3/8-16 x 1 3/8” | 30 lb-ft |
| Frame mounting bolt 7/16-20x 1 1/2” | 45 lb-ft |
| Forward strut to firewall 3/8 x 2” button head allens | 20 lb-ft |

| *DESCRIPTION* | *TORQUE* |
|---|---|
| Gemini connector socket head allen 5/16-24 x 1 1/4” | 25 lb-ft |
| Motor mount spuds | 20 lb-ft |
| Rack clamp socket head allens 1/2-13 x 2” | 45 lb-ft |
| Rack clamp caps socket head allens 5/16-18 x 1” | 15 lb-ft |
| Shock spuds | 20 lb-ft |
| Shock bolts 1/2-20 x 2 1/2” | 45 lb-ft |
| Tie rod stud | 60 lb-ft |
| Wheel studs 1/2-20 x 2 1/4” 12 point | 40 lb-ft |

We recommend applying a small amount of Loctite™ on all fasteners except the balljoint studs, and the tie rod studs.

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# Frame and Sheet Metal Hardware List

## #3040 (1962-1695) or #3041 (1966-1967) Bolt-On Frame Hardware Box

| QTY | PART | DESCRIPTION | WHERE USED |
|---|---|---|---|
| 8<br>8<br>16 | 3134<br>3208<br>3254 | Bolt 7/16-20 x 1½ hex head cap screw<br>Locknut 7/16-20 nylon insert<br>7/16 washer 1/2 x 1 1/8 stainless | Attaches frame clip to cars lower firewall mount plates. Place flat washer on front and backside of the mounting plates. Do not substitute these fasteners; this is a high stress area! |
| 6<br>6<br>6 | 3436<br>3249<br>3253 | Button head allen 3/8-16 x 2 stainless<br>Internal tooth lock washer 3/8 stainless<br>3/8 washer 25/64 x 1 stainless | Attaches the upper strut plate to the firewall. Place the lock washer on the button head allen first and then the flat washer. |
| 8<br>8 | 2040<br>2041 | Firewall shim forward strut (1962-1965)<br>Firewall shim forward strut (1966-1967) | Used to shim the upper strut mount the correct distance from the firewall for correct fender alignment. |
| 4 | 3432 | Socket head allen 5/16-24 x 1 ¼ | Clamps Gemini connector together. Do not substitute this<br>fastener it is designed for this high stress area. |
| 6<br>6<br>6 | 3413<br>3250<br>3212 | Button head allen 10-32 x 5/8 stainless<br>#10 washer 7/32 x7/16 stainless<br>Locknut 10/32 stainless steel | Attaches radiator core support to the frame front crossmember at the bottom on the engine side. |
| 9<br>9<br>8 | 3430<br>3252<br>3244 | Button head allen 5/16-18 x 3/4 stainless<br>5/16 washer 11/32 x 7/8 stainless<br>Locknut 5/16-18 stainless steel | Use six button head allens, nuts, and washers to attach the radiator core support to the frame crossmember. Two additional button head allens, washers, and locknuts are for the upper radiator mounts. The last button head allen and washer are used to mount the center grille support to the frame crossmember. |

## 6650 (1962-1695) or #6652 (1966-1967) Hinge Mount With Upper Fender Panel

| QTY | PART | DESCRIPTION | WHERE USED |
|---|---|---|---|
| 14<br>14 | 3252<br>3429 | Stainless 5/16 washer 11/32 x 7/8<br>Button head allen 5/16-18 x 5/8 | Front fenders to hinge mounts & hinge mounts to radiator core support upper front corners. |

## 6651 (1962-1965) or #6653 (1966-1967) Aluminum Inner Splash Panels

| QTY | PART | DESCRIPTION | WHERE USED |
|---|---|---|---|
| 6<br>12<br>6 | 3429<br>3252<br>3244 | Button head allen 5/16-18 x 5/8<br>Stainless 5/16 washer 11/32 x 7/8<br>Locknut 5/16-18 stainless | Attaches the aluminum inner splash panel to the radiator core support. Place one washer under the button head allen, a second goes on before the locknut. |
| 32<br>50<br>46 | 3413<br>3212<br>3250 | Button head allen 10-32 x 5/8<br>Locknut 10/32 stainless<br>Stainless #10 washer 7/32 x 7/16 | Fifteen 5/8” button head allens, washers, and locknuts attach the rubber splash boot to the aluminum inner splash panel. Place the washer under the nut against the rubber boot when installing. Two spare 5/8” button head allens are in the kit. |
| 34 | 3400 | Button head allen 10-32 x 1/2 | Twenty 1/2” button head allens and locknuts attach the aluminum inner splash panel to the hinge mount. The other twelve 1/2” button head allens and washers attach the inner panel to the frame rail. Use #10 washers where the inner panel bolts to the frame rail. Two spare 1/2” button head allens are included. |

## *Removing Stock Front Clip*

The first step is to set the car on jack stands making sure it is level front to rear and right to left. Place the jack stands under the rocker panel at the front and rear. *The car must be supported on the rocker panels, not the unibody.* Use the rocker panels as your leveling point.

A fifth jack stand at the rear panel is required to keep the car from tipping back when the front end is removed.

Be sure the car is stable before proceeding.

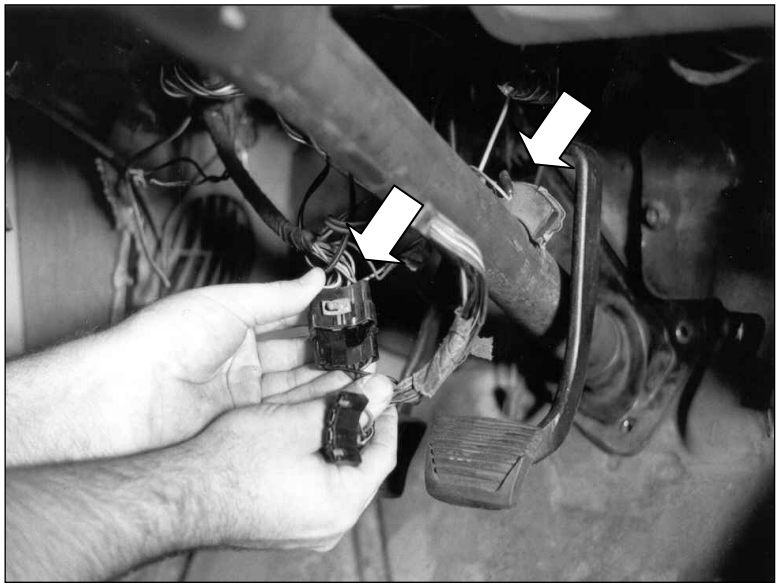

On 1967 models you will not need to remove the column in the car.
Simply disconnect the column from the steering box in the engine compartment.

Next, remove the steering wheel and steering column from the car.

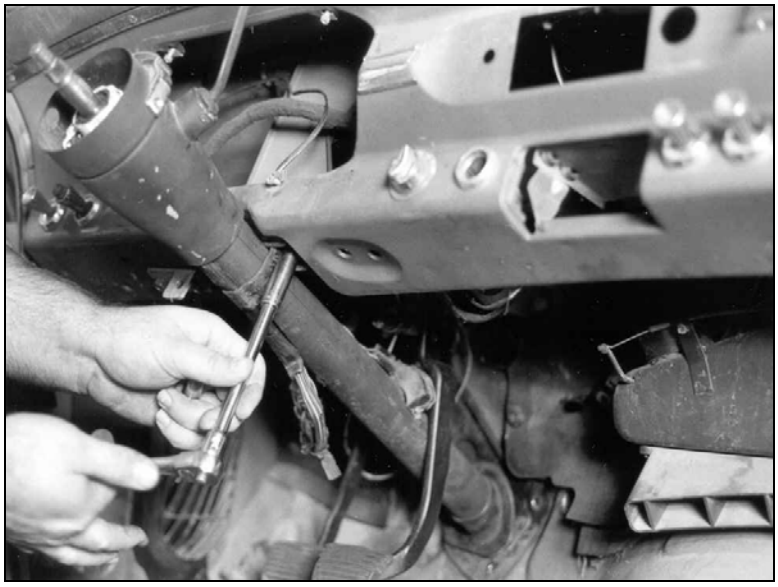
Start by removing the steering wheel. An inexpensive steering wheel puller makes this task easier.

Be careful not to damage any of the column components, you will be reinstalling them later.

There are three bolts holding the lower column-mounting boot to the floor. Remove these bolts and place them in a bag labeled “steering column.”



There are two electrical connectors that need to be unplugged. The first is the turn signal switch (shown in lower part of photo). The second is the neutral safety/back-up light switch (upper part of photo). Once unplugged, the steering column is ready to be removed.



Next, remove the two bolts used to secure the steering column clamp to the underside of the dash. The column should now be loose.

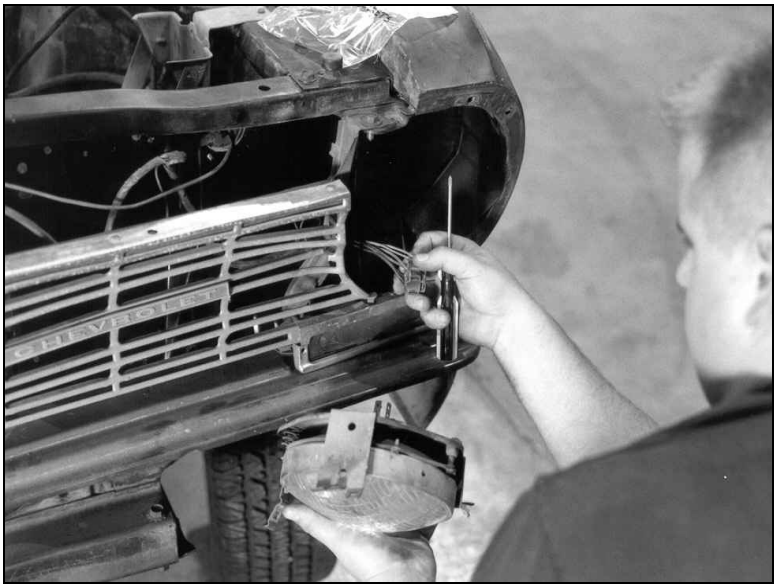
Now the column itself can be removed. Carefully pull it out. Watch to be sure all the wiring is free and it does not get caught on the brake and clutch pedals while removing.

Note that the steering shaft will remain in place; it is attached to the steering box.

Now you will go to the outside and start by removing the hood. A second set of hands will make this easy. It is not important to mark the hinge location on the hood, because it will have to be realigned during reassembly. Once it is removed, set it aside. Put the bolts in a bag labeled "hood hinge bolts."

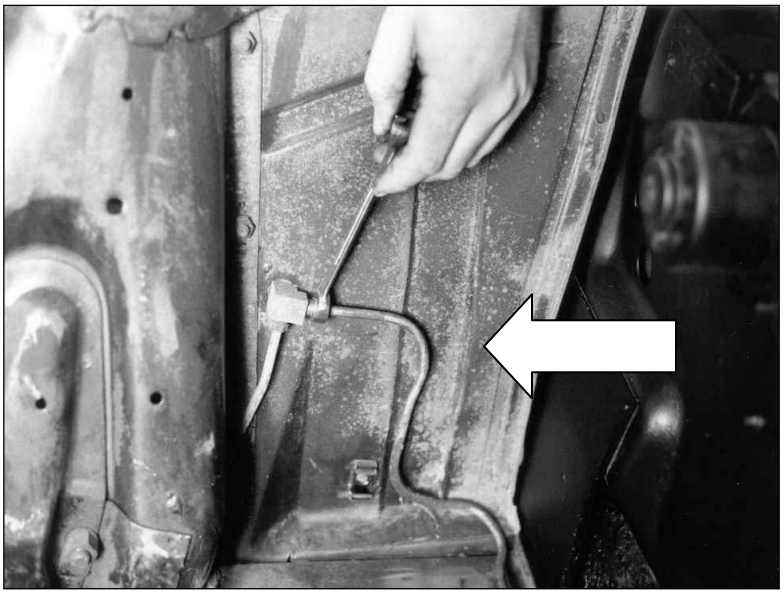

With the hood gone, it is time to remove the hinges. They are attached to the inner fender panel with two bolts on each side. Save these bolts in a bag labeled "hood hinge bolts" for use during reassembly.

Next, drop down under the car and remove the bolts holding the bumper brackets to the frame. There are two on each side. There is no need to remove the bumper brackets from the bumper. Again, put these bolts in a bag labeled “bumper bolts.”



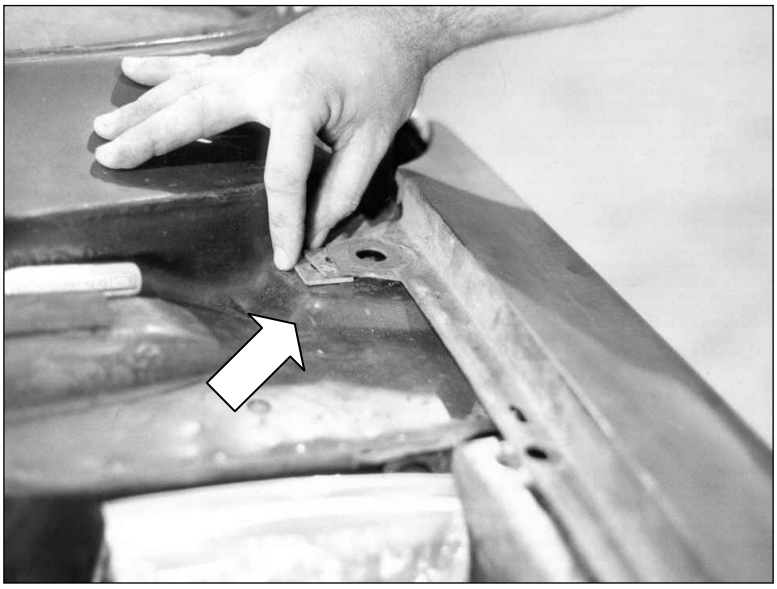
Remove all of the screws holding the headlight assembly in place. Once you have disconnected the wiring, bag the screws and set everything aside for later reuse. Use a bag labeled “headlight fasteners.”

The grille, hood latch, lower pan, and mounting bracket can now be removed as one piece. There are seven bolts holding the assembly on. Two on the hood latch, two at the top front of the fenders, two below the splash pan near the radiator, and one on the lower core support crossmember. All of these fasteners will be reused. Put them in a bag labeled “grille bolts.”



Disconnect the brake lines from the “T” fitting mounted to the inner fender panel. This is an inverted flare fitting. Using a brake line wrench works best to avoid damaging it.

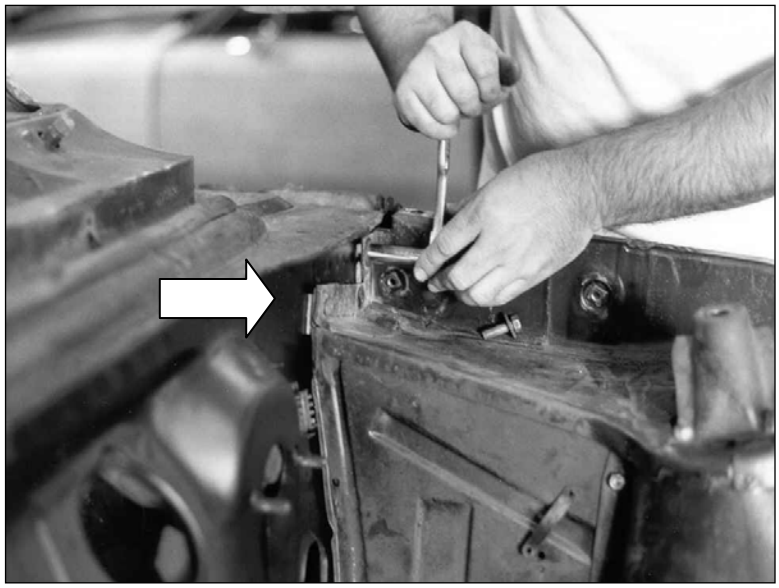
Unplug the electrical wiring harness at the firewall. Once it is unplugged you can remove the entire wiring harness from the front end, set it aside for use later.



Now it's time to remove the outer fender panels. Remove the fender bolts and save the shims under the bolt located closest to the cowl on each side. Place these in a bag labeled “fender bolts.”

One bolt secures the lower front lip of the fender to a strut that is mounted to the radiator core support (visible between the fender and the tire). Another bolt holds the lower rear fender panel just in front of the door. Two more are found underneath the car. Remove these and the fender is free and ready to stack with the other parts.

Now you need to prepare to remove the entire front clip. Start by cutting a piece of wood 4x4 to fit under the frame. With the help of a floor jack, it wedges in place in front of the drag link/tie rod assembly and behind the lower suspension control arms.



There are three bolts securing the top of the front clip to the firewall at each side. After removing these bolts, the shims between the frame and the firewall should slide out fairly easy.

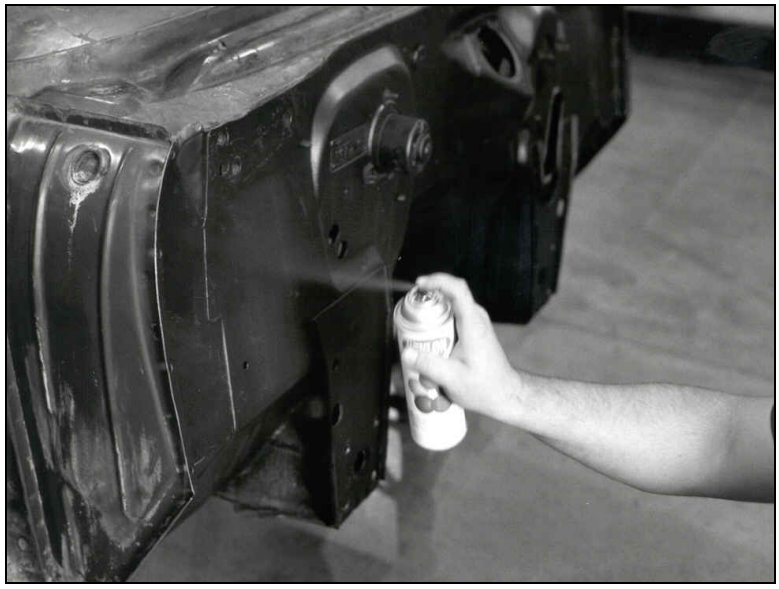

Label these shims to identify which side they were on, then place them in a bag labeled “front clip shims” and set aside. They will <u>not</u> be reused on your new Chassisworks front frame, but will be measured for total thickness and replaced with the custom shims included in the kit.

Removing the four bolts at the bottom of each side of the front clip is all that remains to separate the nose from the car. At this point, have an assistant on hand to keep the front end stable until you can get out of the way.

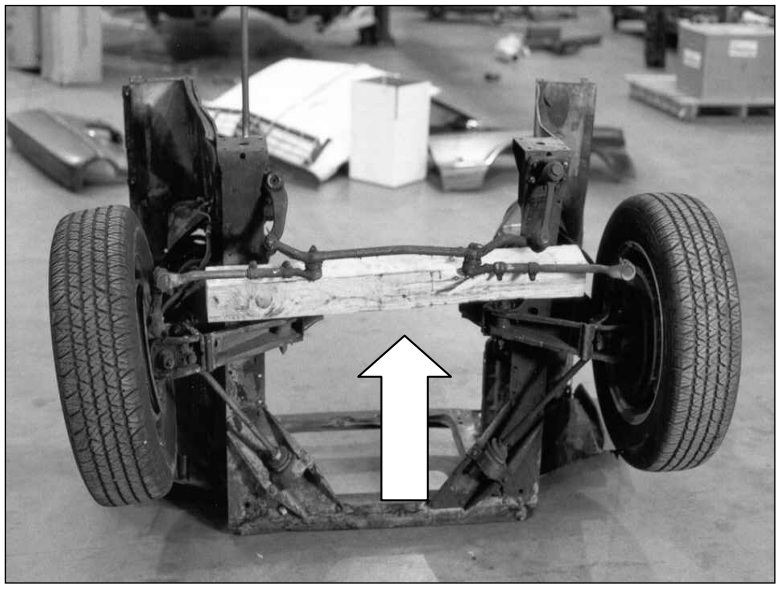
You are now ready to remove the clip from the car. Check to make sure all wiring and lines are disconnected.

Have one person steady the front clip and the other work the jack to make rolling it away from the body simple.

The steering shaft will remain with the nose of the car.  Be careful when pulling the front clip away to avoid damaging the shaft, it will be reused with the new front suspension system.



With the front end off, this is a good time to clean up and paint the car's firewall in preparation for installing the new front clip assembly.

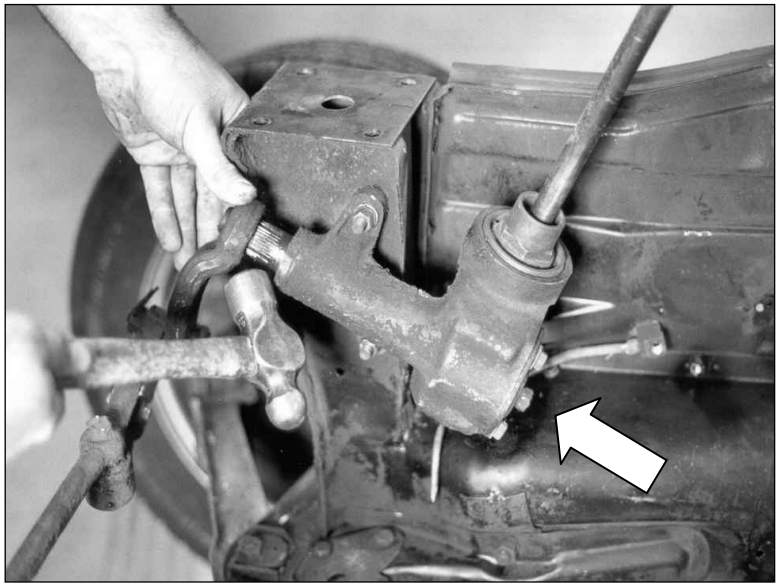


Here is the stock front end set nose-down on the shop floor, with the other pieces that have been removed in the background.  The wood 4x4's suggested location is also clearly visible. This position facilitates the removal of the steering shaft.

The steering box has to be disassembled to remove the steering shaft from the steering box.

Start by removing the nut securing the Pitman arm to the steering box.

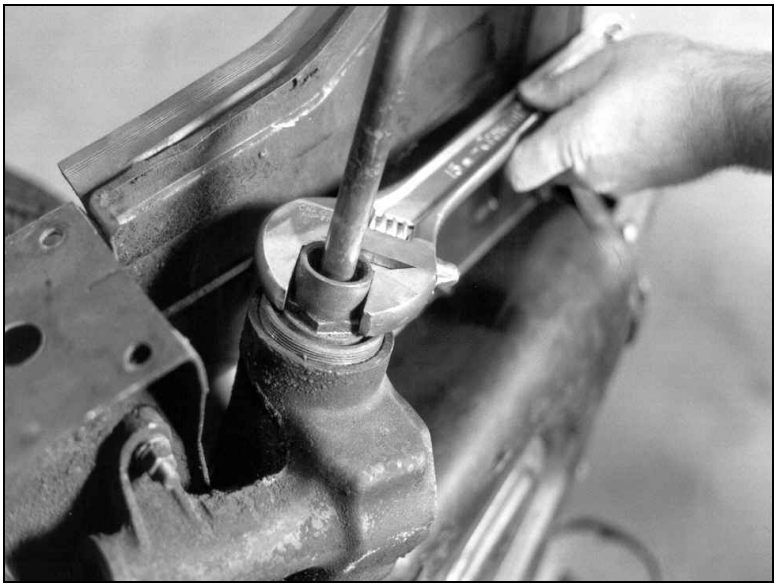
The 4x4 installed earlier will hold the Pitman arm while the nut is loosened.



Once the nut is removed, a few taps of a hammer should pop the Pitman arm loose. If it is extremely tight, tapping on the side first will generally loosen it faster.

After removing the three bolts securing the back plate to the steering box, use a hammer to knock the Pitman arm shaft out. The shaft will rotate while it is being removed.

Slide the Pitman arm shaft all the way out of the steering box and discard it.

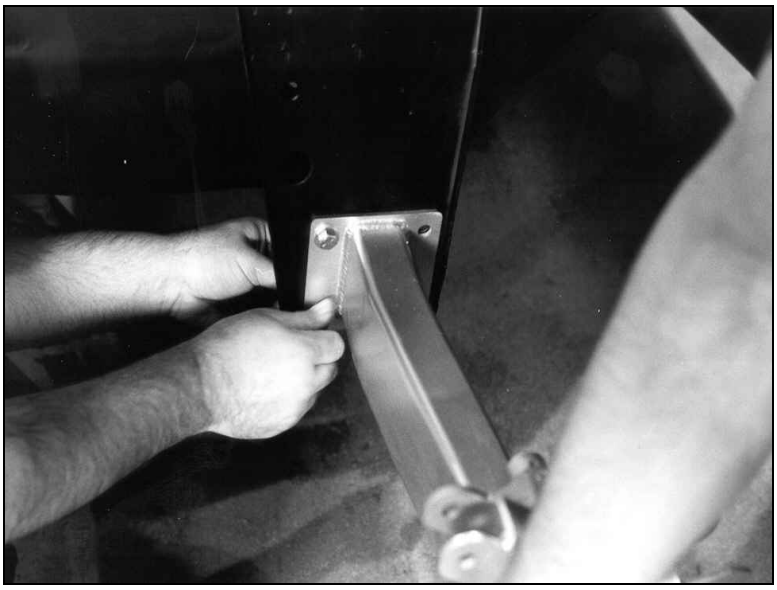


Unscrew the large nut holding the steering shaft itself into the steering box.

Pull the shaft free from the steering box and set it with the hood and fenders for later reuse.

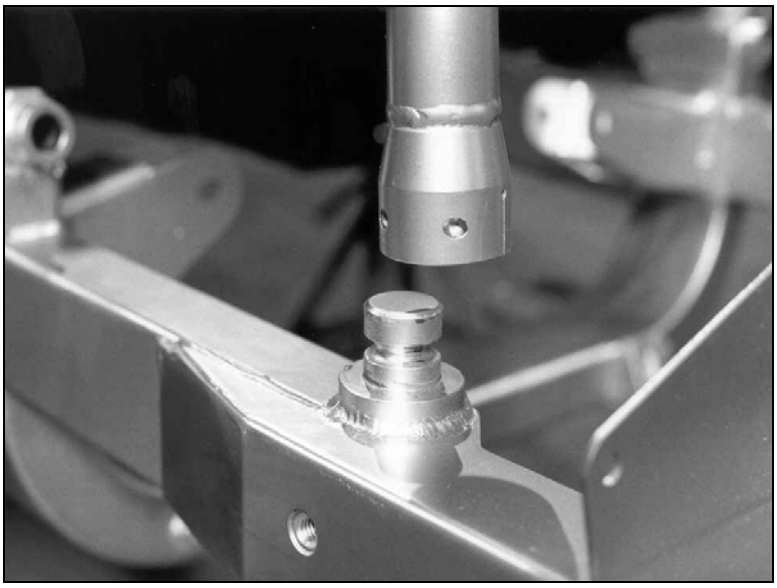
## Installing Bolt-On Frame

With all of the stock front-end components removed, it is time to install the new frame. Position it against the lower mounts on the car and bolt the frame in place. As you can see, this is a two-person job.

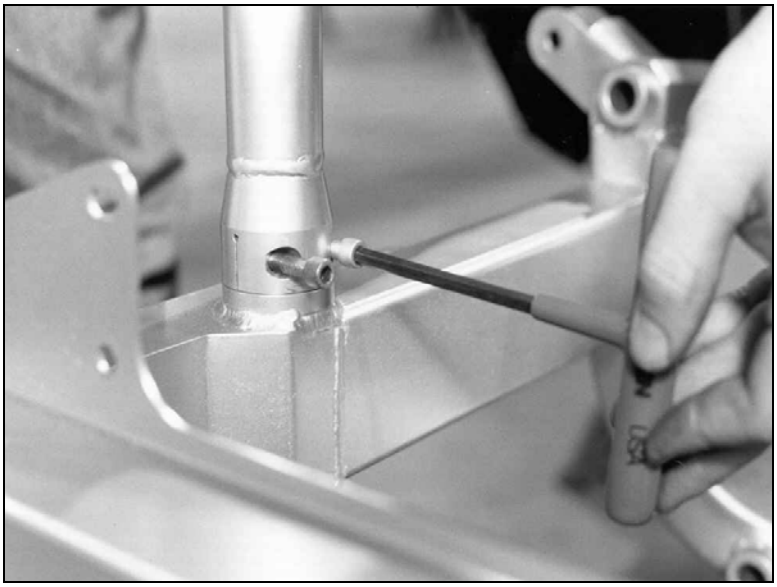


Attach the frame to the lower mounts using the 7/16-20 x 1 1/2 hex head cap screws, washers and locknuts provided. This is a high stress area, do not substitute other hardware. Once you have all the hex head cap screws installed, the front end will hang in place. Due to vehicle age, condition, and factory tolerances, the lower-mount angle will vary up to three degrees.Your new subframe will correct any variance.
Make sure the eight bolts mounting bolts are loose. The nuts should only be threaded so there is at least 1/8” of clearance between the bolt and the frame. These bolts will be tightened after the struts are installed.

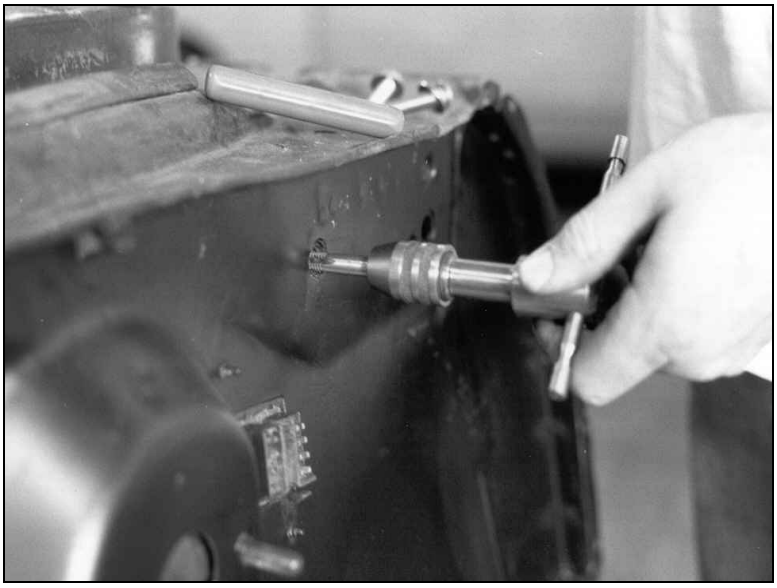
The next step is to install the front struts onto the male Gemini connectors that are factory-welded onto the frame.



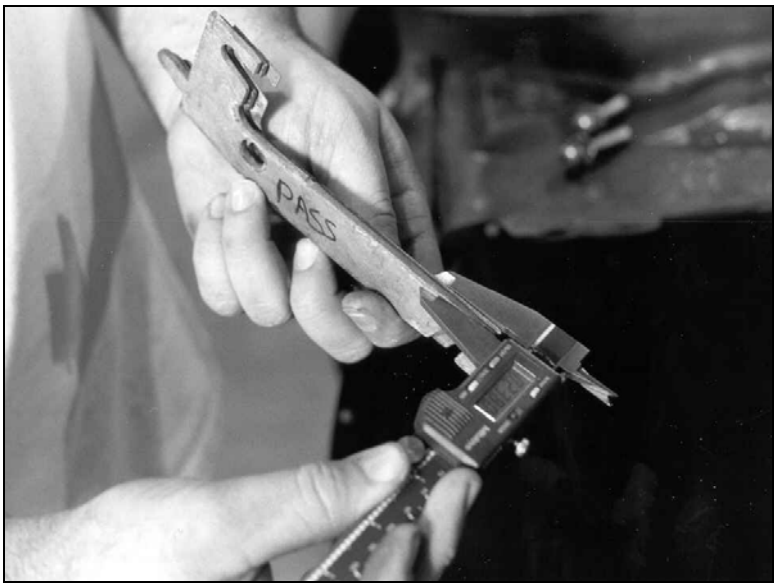
This is a close-up view of the Gemini connector. The female end, which is factory-welded to the strut, simply slips over the frame's male portion.



Two 5/16-24 x 1 1/4 socket head allens are installed to secure the strut to the frame.  Do not torque these until we have the upper end attached to the firewall.  These high strength alloy steel fasteners are highly stressed; do not substitute any other fastener.



Before installing the upper strut plates, it is a good idea to chase the threads of the factory weld nuts. Make sure they are clear of any dirt or grime.

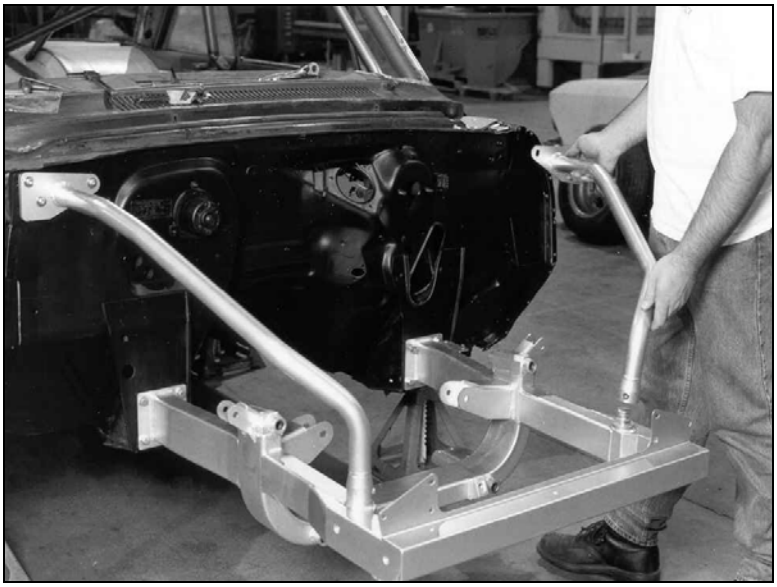



Next, get the stock shims for the passenger side and measure the thickness.

New shims are provided with the front frame kit; use as many as required (maximum of 4 per side) to achieve the same thickness as the factory shim pack measured. You may have to change the number of shims per side if the front fender-to-door gap cannot be adjusted to your satisfaction.

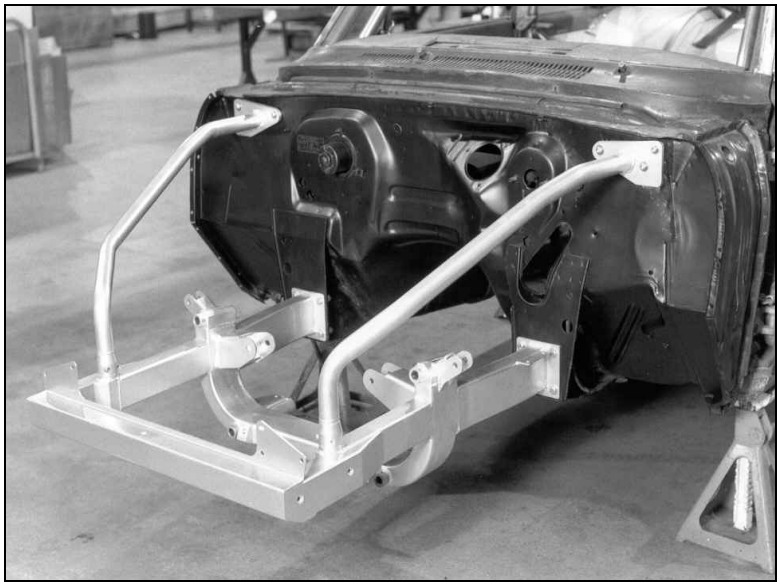
Take the appropriate number of new shims and install them on the backside of the strut mounting plate between the firewall and the plate. This will give you the correct alignment on the clip and the new upper hinge mount.

Use the 3/8-16 x 2” stainless steel button head allens provided to attach the upper strut plate to the firewall. Place the internal tooth lock washer on the button head allen first and then the flat washer. Do not fully tighten these until the driver’s side is in place.



Repeat the process to install the driver’s side strut. Once it is in place, tighten the inboard bolts at the firewall and all bolts on the Gemini connectors. Only snug up the outer bolts on the upper strut plate at the firewall until the hinge mount plates are installed.

In some installations the struts may be difficult to bolt to the upper mounts. Do not modify the frame or struts. Doing so will prevent the fenders from fitting correctly.



Place a floor jack under the subframe crossmember and raise it until the struts can be bolted on. You may need to raise one side more than the other. One person guiding the strut and a second person installing the bolts may help. After both struts are in place, tighten the lower mounting bolts, starting the four top ones first.

Your car should look like this with the frame and forward struts installed.

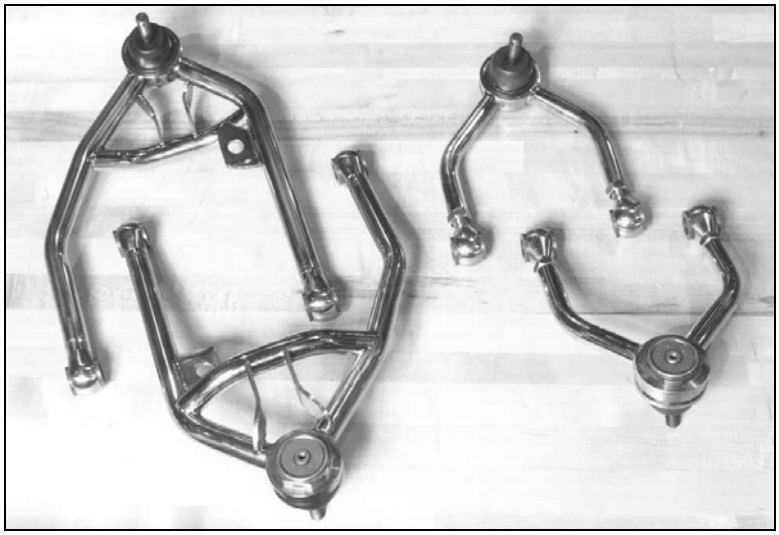
## Installing Suspension

In this section you will install all of the front suspension components and align the front-end geometry. It is easier to do this before the engine and front sheet metal are installed.

If you purchased plain steel A-arms, have them painted or powder coated before you assemble them. Do not get paint in the balljoint housing thread bore or in the pivot bushing bores. The balljoint bores are precision machined. Consequently, you cannot install and remove the balljoints multiple times. The self-locking threads on the balljoint will destroy the balljoint housing if it is removed and installed several times. Have your A-arms painted before the balljoint is assembled to minimize this potential problem.

Do not plate or chrome the A-arms. The plating solution can leak into the tubes and cause them to rust from the inside out. If you drill drain holes in the tubes, the A-arm will crack from the holes. If you want a highly polished look, purchase our stainless A-arms.

The mild steel lower A-arms are shipped without their pivot bushings installed to make painting or powder coating easier. Use an arbor press to install the bushings.



## Installing Lower & Upper A-arms and Spindles

The first parts installed will be the upper and lower A-arms. The stainless steel lower A-arm comes with all of the bushings installed. You will be installing the bushings and rod ends in the upper A-arms later.

For identification, the driver side A-arm assembly is embossed with a “D” on the balljoint housing.

The passenger side is embossed with a “P” on the balljoint housing.

The balljoint rubber boot is installed in the balljoint housing first. Because the boot fits tight in the housing, installing it before the balljoint is easier. Drop the boot into the machined bore in the balljoint housing.

Work your way around the boot's edge, pushing it down into the bore with your fingers. You can also use a blunt tool to do this.

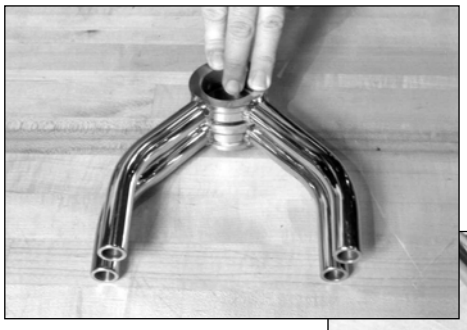
During the assembly process we are going to coat all of the threaded assemblies with an anti-seize compound to prevent the threads from being damaged and aid disassembly in the future.

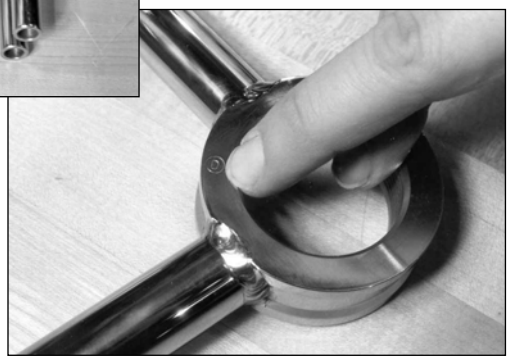
Put a thin layer of anti-seize on the balljoint threads.

The balljoint is then screwed into the balljoint housing as far as possible by hand. Make absolutely sure that the thread starts straight. This is a little tricky. The threads on the balljoint are easy to cross thread.

Use the balljoint wrench included with your kit to tighten the balljoint. Tighten it until it is fully seated against the balljoint housing. The force required can be over 150 lb-ft of torque. Be careful not to scratch the A-arm. Repeat this for the passenger side lower A-arm.

One convenient method for holding the A-arm while installing the balljoint is to temporarily install the A-arm on the frame.





The upper A-arms will be assembled next. Although they are very similar, they are not identical. The letter “D” or “P” on the balljoint housing identifies which side of the car the A-arm installs in.

Use a 5/8-18 tap to chase the threads in the upper A-arm. Clear any debris left in the threads.

Use the same procedure to assemble the upper A-arm as the lower. First, install the balljoint boot into the balljoint housing.

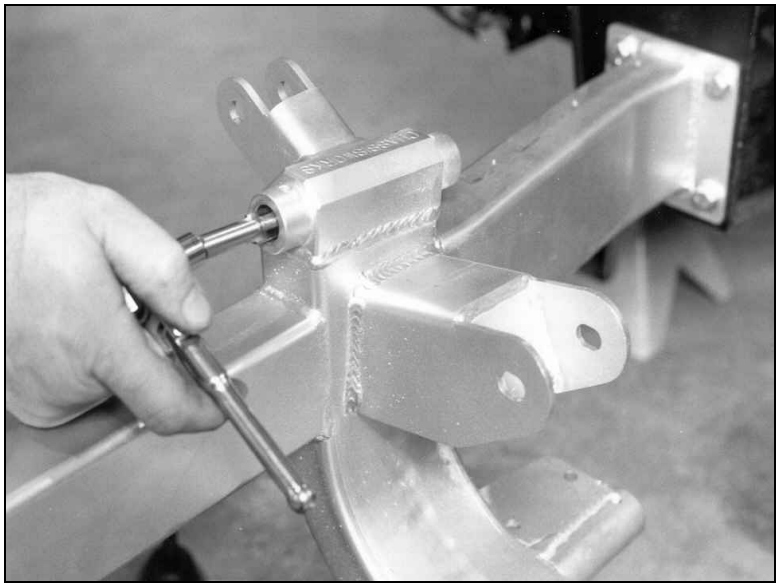

Next, apply a layer of anti-seize to the balljoint threads.

Thread the balljoint in as far as possible by hand.

Finish tightening the balljoint with the balljoint wrench until it is seated tight against the balljoint housing.  Repeat this for the passenger side upper A-arm.


Install the rod ends into the upper A-arms.  To provide an initial alignment baseline, the jam nut should be threaded until there is 1-1/16 inches of thread remaining past the jam nut.


After the application of another dab of anti-seize, the rod ends are threaded into the A-arms, until the jam nuts are snug against the arm itself.



This step must be done carefully because the upper and lower A-arm mounts are threaded and welded to the frame. Use the 5/8-18 tap to chase the threads on the front and backsides of both upper mounts. Blow any remaining particles out of the hole with an air hose.