

" THIS ARTICLE IS INTENDED FOR YOUR REFERENCE ONLY.

ACTUAL PARTS, YEARS AND BODY STYLES CONTAINED

IN THIS ARTICLE MAY DIFFER SLIGHTLY FROM YOUR APPLICATION. "

Rack & Pinion Update with Tubular Crossmember, 1955-57

Part 1

Randy Irwin

In August of 1993 Classic Chevy International revolutionized the industry with the introduction of the bolt-in Rack & Pinion conversion kit to replaced the stock steering gear box. We didn't stop there, many improvements and additions have been made to the kit so that other columns could be used as well as redesigning the cross member. The new tubular crossmember gives more clearance for the oil pan and more ground clearance, while maintaining the same location of the rack & pinion making it easy to update to the new tubular design.

Time Frame:

8 Hours

Tools Needed:

1/2" Wrench

9/16" Wrench

3/4" Wrench

Hack saw

Electric drill

The new tubular cross member, **part #53-75**, has 3/8" flat plates on each end that bolt to the inside of the frame. In **photo #1** you can see how the new tubular crossmember has been simplified, is lighter, and has a cleaner look than the first design.

On the driver's side the tubular crossmember attaches to the same location where the steering box once bolted. On the passenger's side it attaches where the idler arm once bolted. The tubular crossmember uses 3/8" x 4" grade 5 bolts with flat washers on the outside of the frame, and flat washers, lock washers, and nuts on the inside (see **photo #2**). The dimensions of the frame where the tubular crossmember bolts can vary as much as 3/8". We have measured many frames and designed the tubular crossmember to flex and expand as it is needed. This particular frame was about 1/4" wider then the crossmember, but by bolting up one side and then tightening up the other, the crossmember will draw into place without any problems. The frame has sleeves in it where the bolts pass through to add strength so the frame will not collapse (see **photo #3**).



Photo #1

#53-226



Parts Needed:

- 53-125** 55-57 Deluxe power rack and pinion kit, small block
- 53-126** 55-57 Deluxe power rack and pinion kit, big block
- 53-225** 55-57 Mega power rack and pinion kit, small block
- 53-226** 55-57 Mega power rack and pinion kit, big block
† Rackbar mega kits include complete rack & pinion kits, power steering pump, pump mounting brackets, pulleys and belts.
- 53-76** 55-57 Modified rack & pinion unit
- 53-75** 55-57 Tubular crossmember for rack unit (includes mounting hardware and steering shaft bushing)
- 53-77** 55-57 Rack and pinion steering coupler (includes 2 universal joints & shaft with hardware)
- 53-87** 55-57 Steering arms for rack and pinion
- 53-50** 55-57 Return line with O-ring fittings for 605, rack & pinion
- 53-38** 55-57 Rack & pinion power steering hoses, small block
- 53-79** 55-57 Rack & pinion power steering hoses, big block
- 53-104** 55-57 Tilt column firewall bracket w/band clamp
- 21-08** 55-57 Tie rod sleeve (2 required)
Fits left or right on all original non-power steering cars.
Fits right only on all original power steering cars.
- 21-07** 55-57 Outer tie rod (2 required)

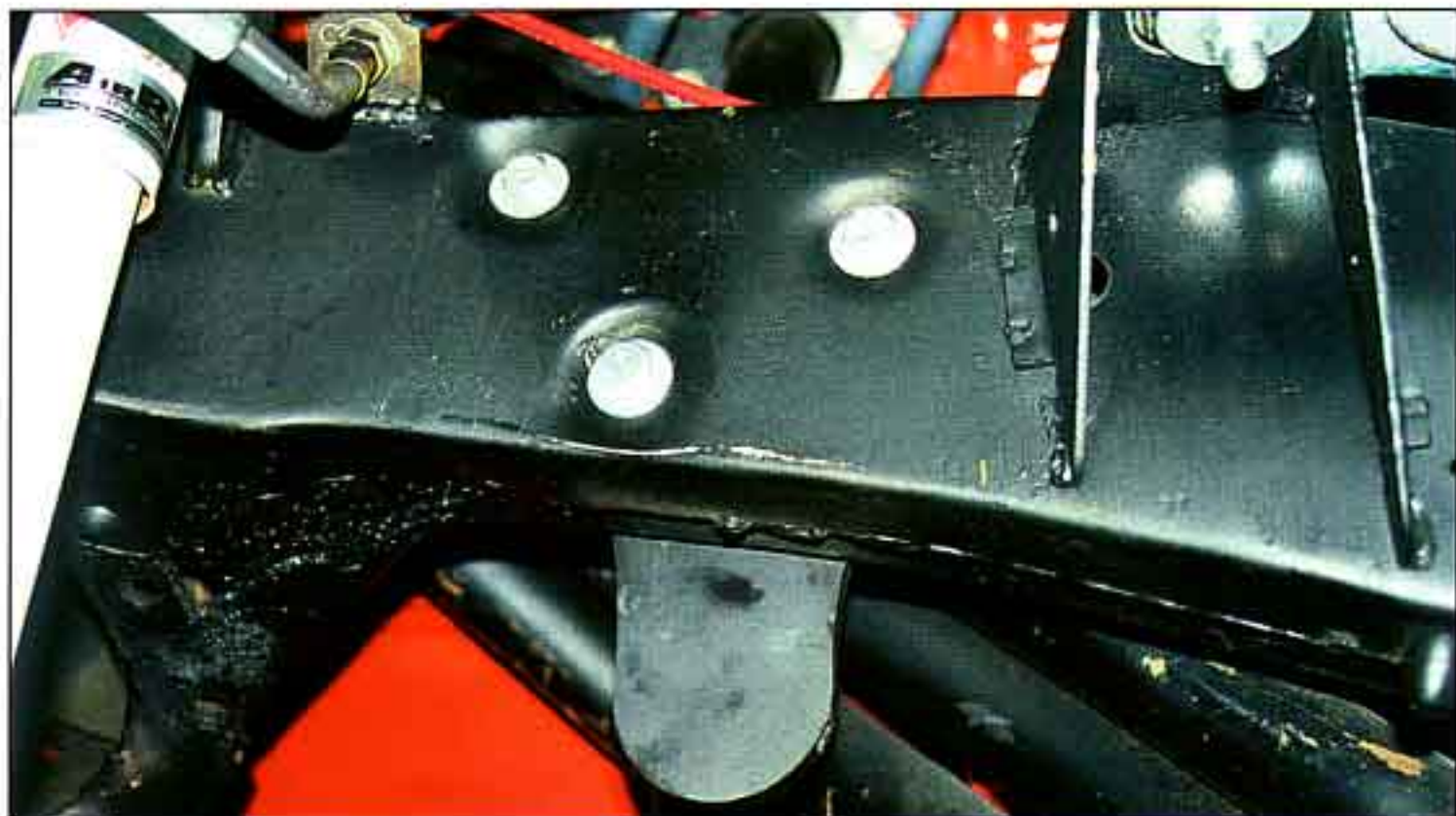


Photo #2

We have a big block installed in our frame with a Moroso oil pan, **part #18-205**, designed especially to work with our big block installation kit, **part #18-200**, which moves the engine forward 2 1/4" for firewall clearance. We had to use this Moroso oil pan, but small block cars have plenty of clearance with the stock oil pan (**see photo #4**).

The rack and pinion mounts to the tubular crossmember with two ears. The driver's side has a rubber bushing with a steel sleeve in it. The rack and pinion kits all come with three 1/2" flat washers, one 1/2" cupped washer, and two 1/2" x 3" bolts that hold it to the crossmember. On the driver's side place one washer on each side of the solid ear. On the passenger's side place one flat washer on the backside of the rack and one between the tubular crossmember and rack and pinion. The cupped washer goes on the front side of the rack and pinion (**see photo #5**). The two 1/2" x 3" bolts will screw into the bosses welded into the crossmember. Torque these bolts to 65 ft./ lbs. (**see photo #6**). If you are installing the entire rack and pinion kit for the first time, the steering arms that mount to the spindle will need to be replaced with new steering arms, **part #53-87**, which are included in the kit (**see photo #7**). The new steering arms are CNC machined out of chrome molly steel and are 1 5/8" shorter than the stock steering arms in order to maintain the stock steering radius (**see photo #8**). The steering arms will bolt to the spindles using your original hardware (**see photo #9**).

The rack and pinion unit, **part #53-76**, comes from the manufacturer with the inner tie rod ends modified from a metric

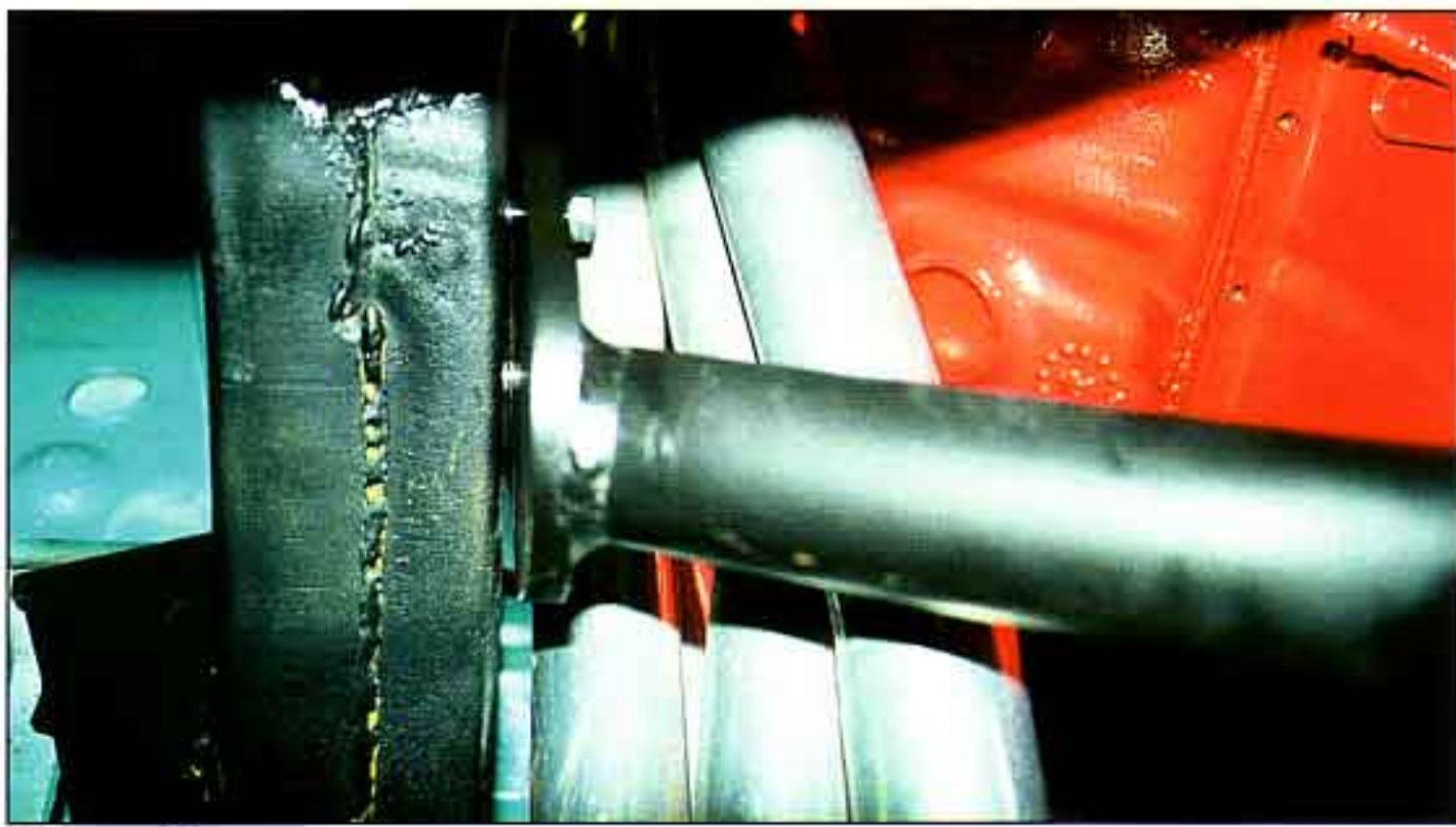


Photo #3



Photo #4



Photo #5



Photo #6



Photo #7



Photo #8



Photo #9



Photo #10

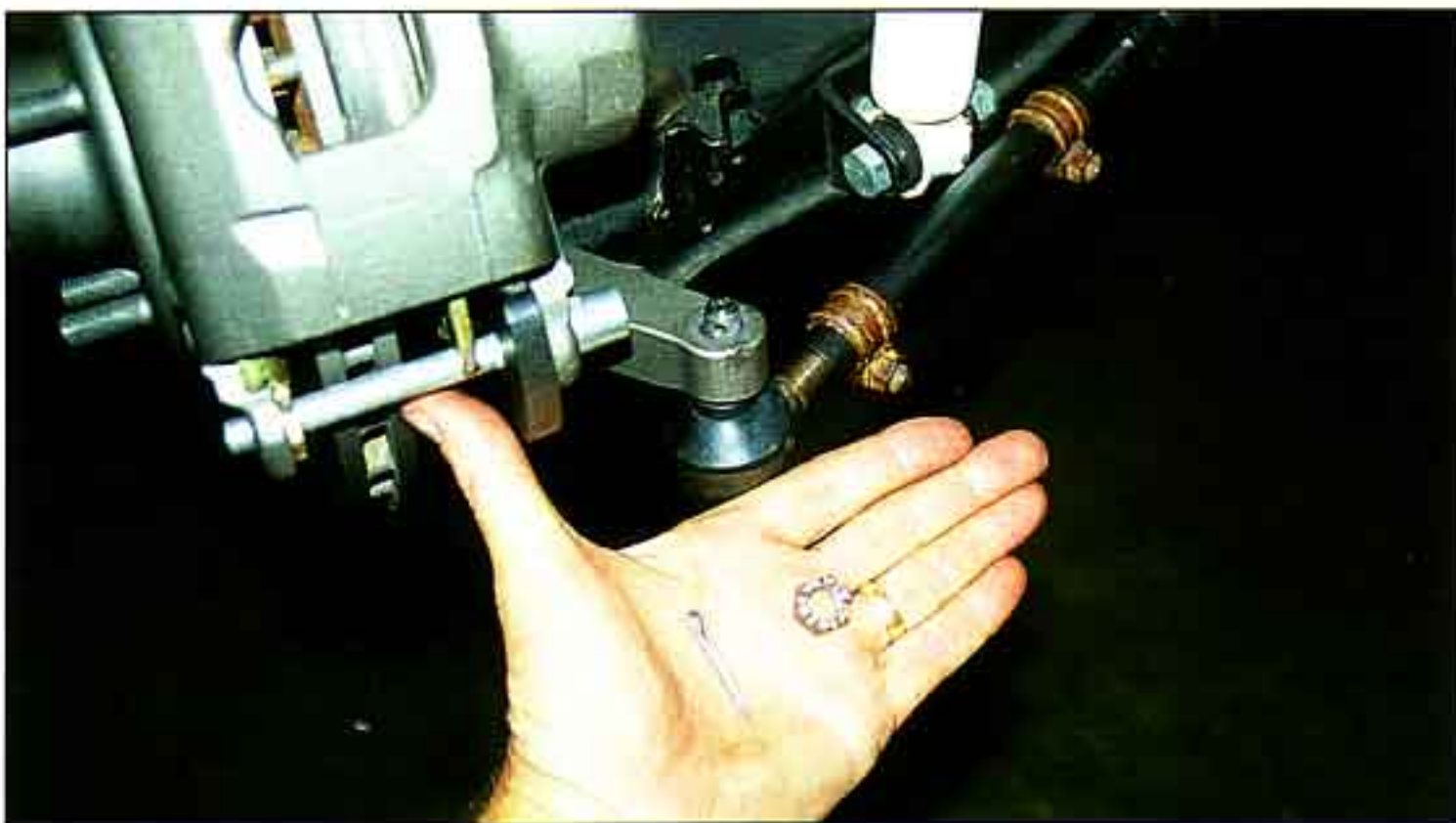


Photo #11

thread to 9/16 - 18 right hand treads, just like the stock tie rod ends from the original steering set up. This allows the stock tie rod sleeves, **part #21-08**, and outer tie rod ends to be used (see **photo #10**). Now attached the outer tie rod ends to the new steering arm with the castalated nut and cotter pin. Remember, the front end will need a complete re-alignment before driving (see **photo #11**).

If you are installing the stock steering column you will need to cut off the original steering shaft from the steering gear box (see **photo #12**). Now with the steering wheel bolted to the steering shaft, place the shaft through the mast jacket and then cut the shaft off so that there is only 1 1/8" sticking out from the bottom of the mast jacket (see **photo #13**). There are three brass bushings included in the rack and pinion kits that can be used with the various steering columns. The bushing slips up inside of the mast jacket to support the lower end of the steering shaft. Make sure that the inside of the mast lower bearing is clean, so that the bushing can slide smoothly (see **photos #14a & 14b**). Now with the bushing in place, the shaft is supported at the bottom of the column. The U-joint at the column is a is a permanently greased U-joint and is held into place by drilling through the joint and shaft and pinning it in place with a 5/16 x 1 1/4" grade 8 bolt and lock nut (see **photos #15a & 15b**). We are going to replace the stock mast jacket clamp that holds the mast jacket in place on the engine compartment side with a tilt column firewall bracket with band clamp, **part # 53-104**. This bracket mounts to the inside of the firewall(see **photos #16a & 16b**).

For Ididit Tilt Columns Only:

If you are installing one of our Ididit tilt columns, follow the next few steps for proper installation. The steering column we installed is an Ididit 200 series tilt column, **part #53-210**, that comes with a 3/4" solid shaft with a 36 spline at the bottom. The manufacturer makes the shaft on our columns extra long so that they can be cut down to fit the car it will be installed in (see **photos #17a & 17b**). Cut the shaft so that 3 3/4" extends from the bottom of the mast jacket and then drill and pin the upper U-joint to the shaft with the 5/16" x 1 1/4" bolt and lock nut. This will put the upper U-joint in the proper location (see **photos #18a & 18b**). The steering column is mounted in two areas. At the dash



Photo #12



Photo #13



Photo #14a



Photo #14b



Photo #15a



Photo #15b

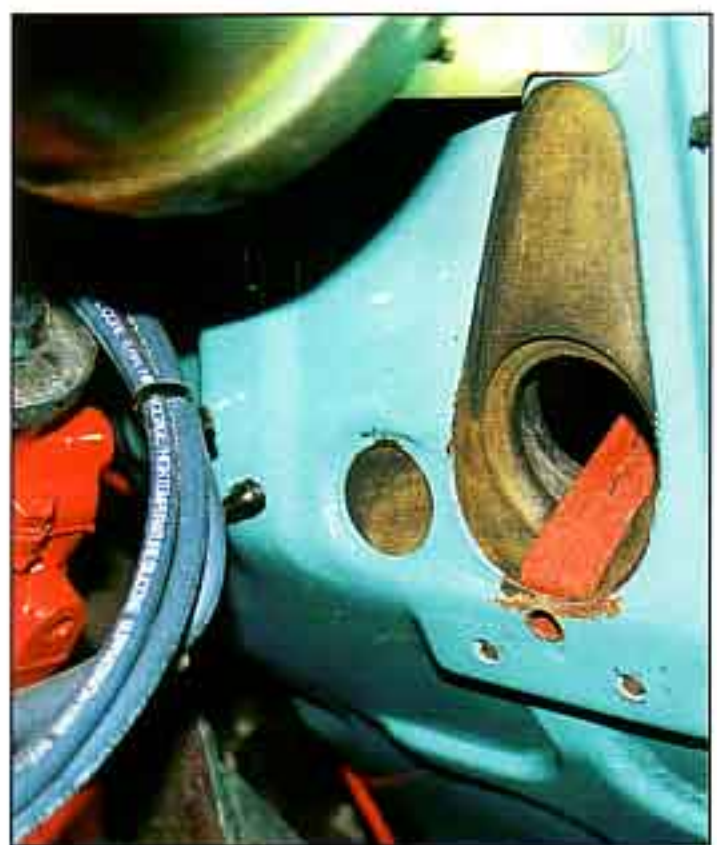


Photo #16a



Photo #16b



Photo #17a

We have a big block installed in our frame with a Moroso oil pan, **part #18-205**, designed especially to work with our big block installation kit, **part #18-200**, which moves the engine forward 2 1/4" for firewall clearance. We had to use this Moroso oil pan, but small block cars have plenty of clearance with the stock oil pan (see **photo #4**).

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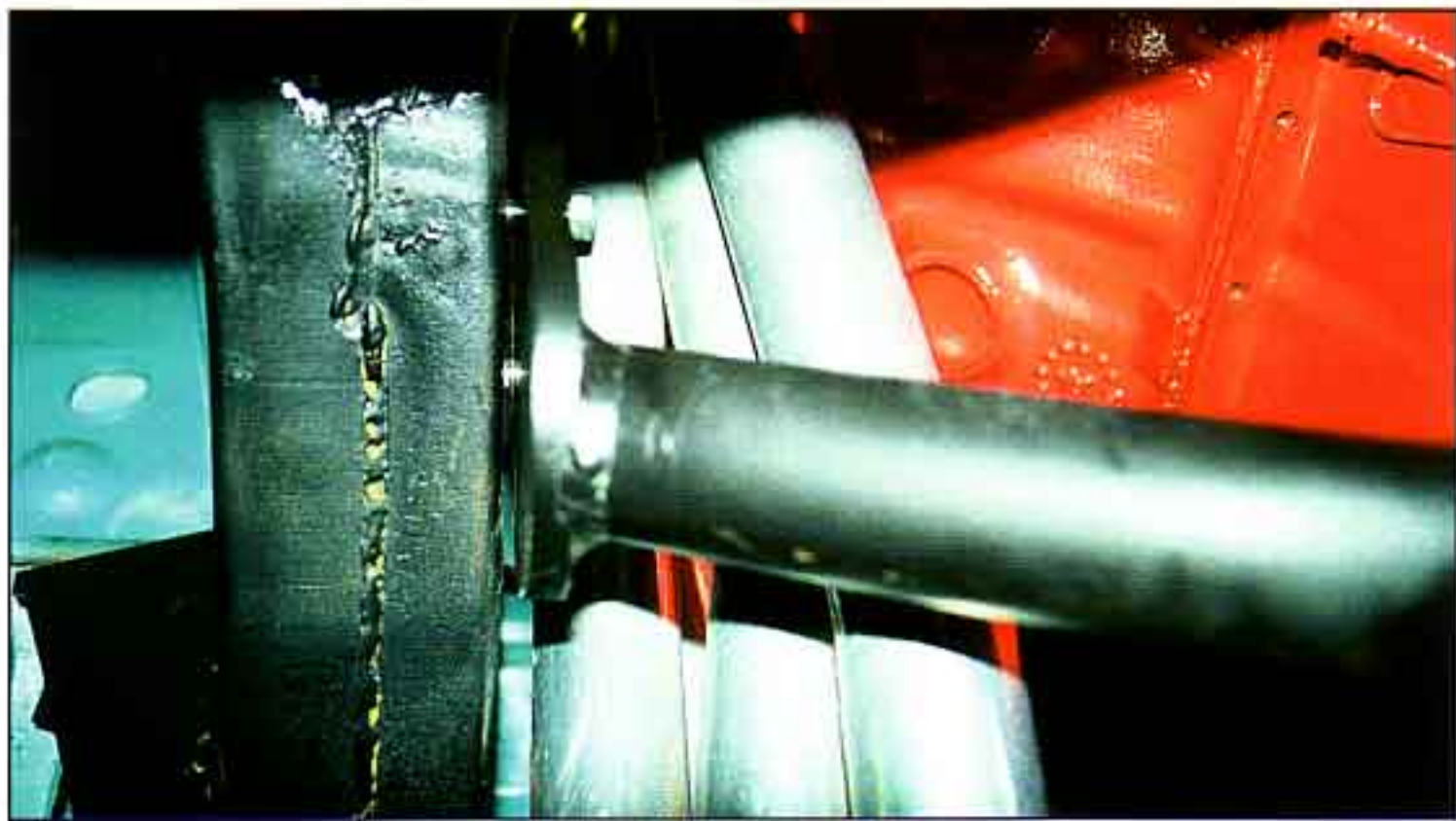


Photo #3



Photo #4



Photo #5



Photo #6



Photo #7



Photo #8



Photo #9



Photo #10

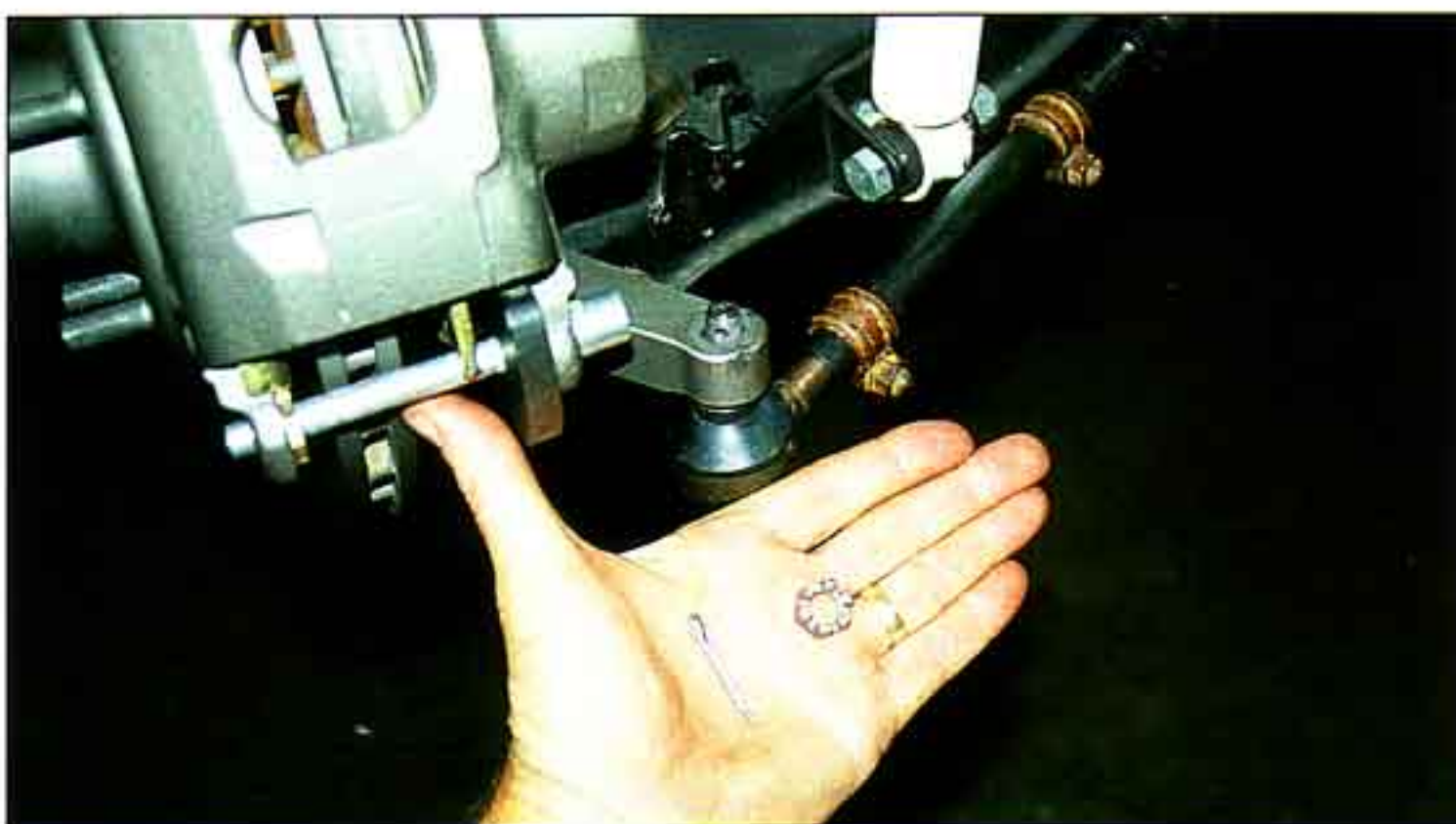


Photo #11

board, it attaches with the stock clamp and rubber pad, **part # 05-13 (55-56 only)**, that wraps around the column (see **photo #19**). On the underside of the column (55-56 cars), there is a slot where the lower half of the dash clamp fits into place. The upper half of the clamp squeezes the rubber pad (55-56) and this holds the bottom of the column in place (see **photos #20a & 20b**). The upper bracket attaches to the dash with two 5/16 SAE nuts (see **photo #21**). On 1957 cars, the stock clamp bolts right to the column and dash. The stainless band supplied with the lower bracket, **part #53-104**, will hold the column in place at the bottom (see **photo #22**). Now the steering column shaft will put the upper U-joint in the same location as though a stock column was installed (see **photo #23**).

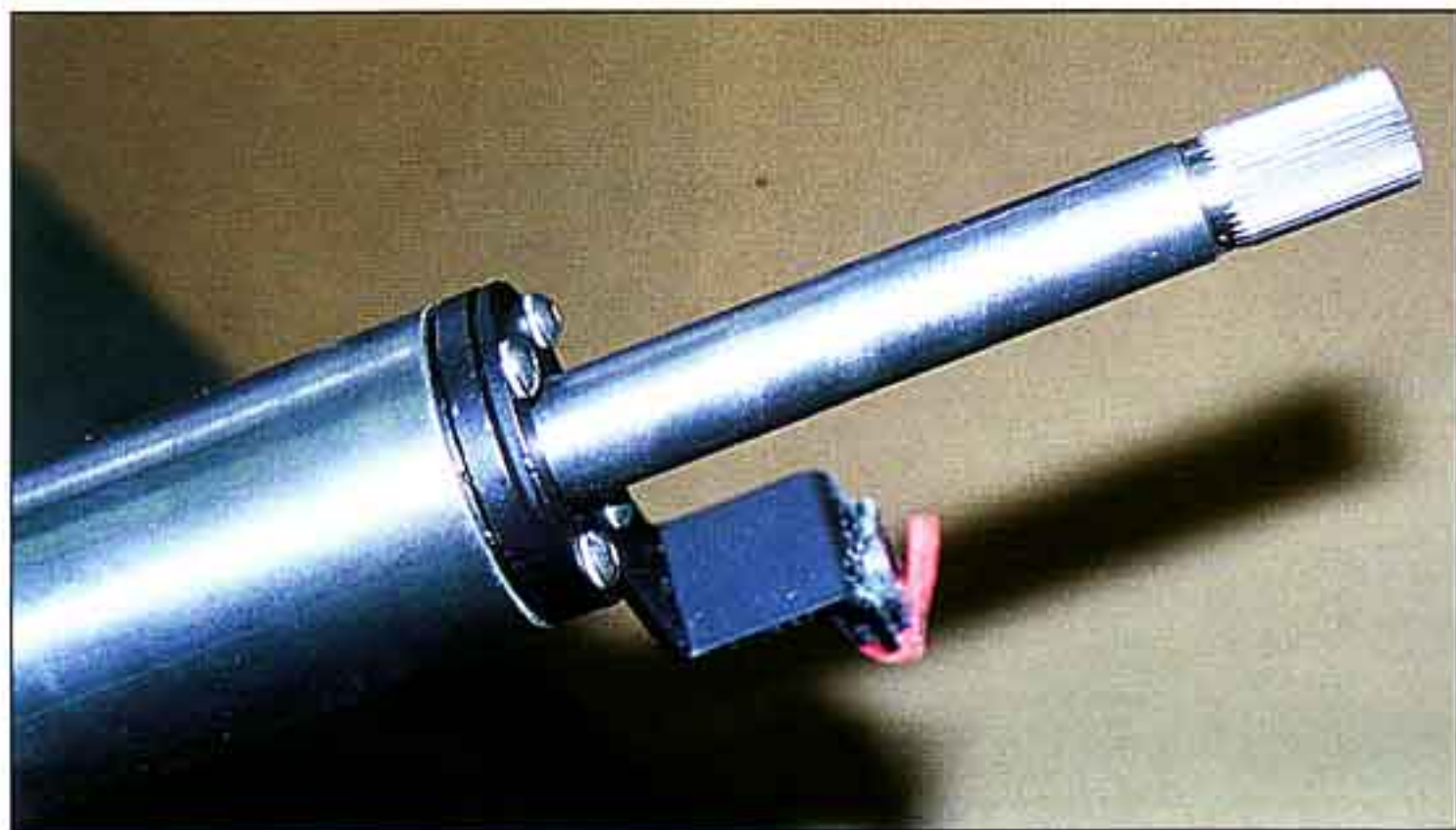


Photo #17b



Photo #18a



Photo #18b



Photo #19



Photo #20a



Photo #20b

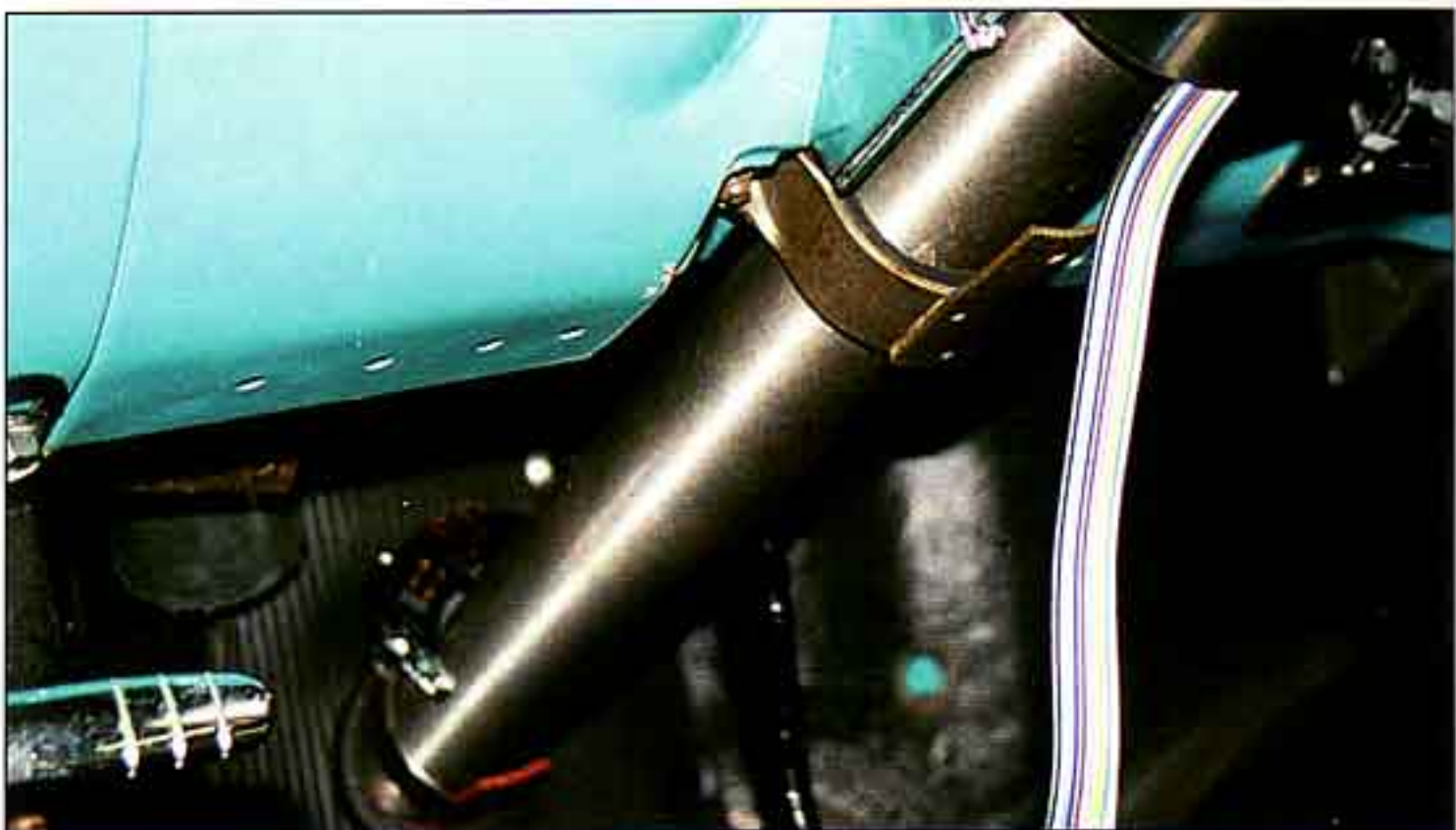


Photo #21



Photo #22

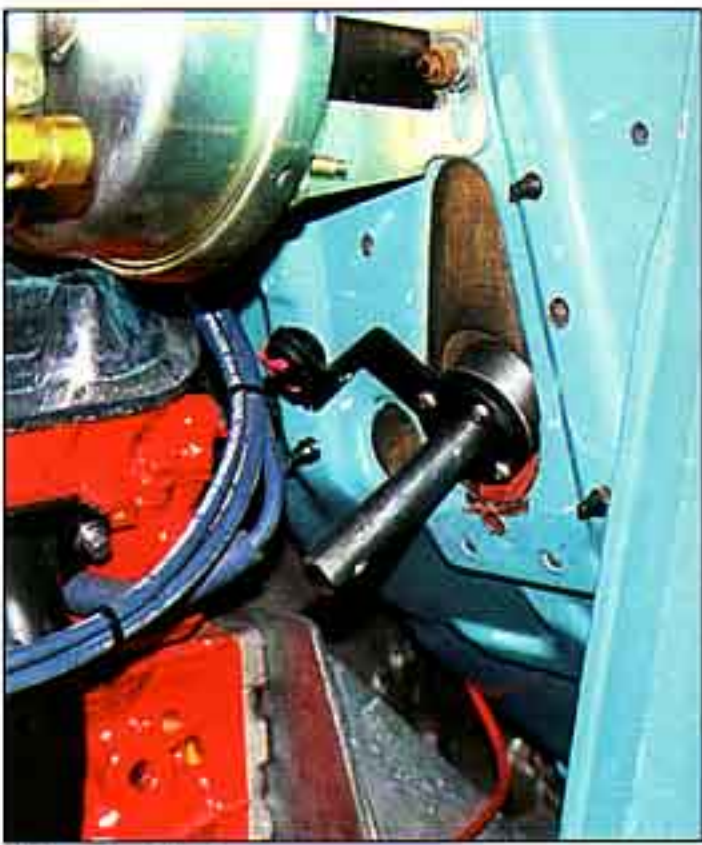


Photo #23



Photo #24a



Photo #24b



Photo #25



Photo #26a



Photo #26b



Photo #27

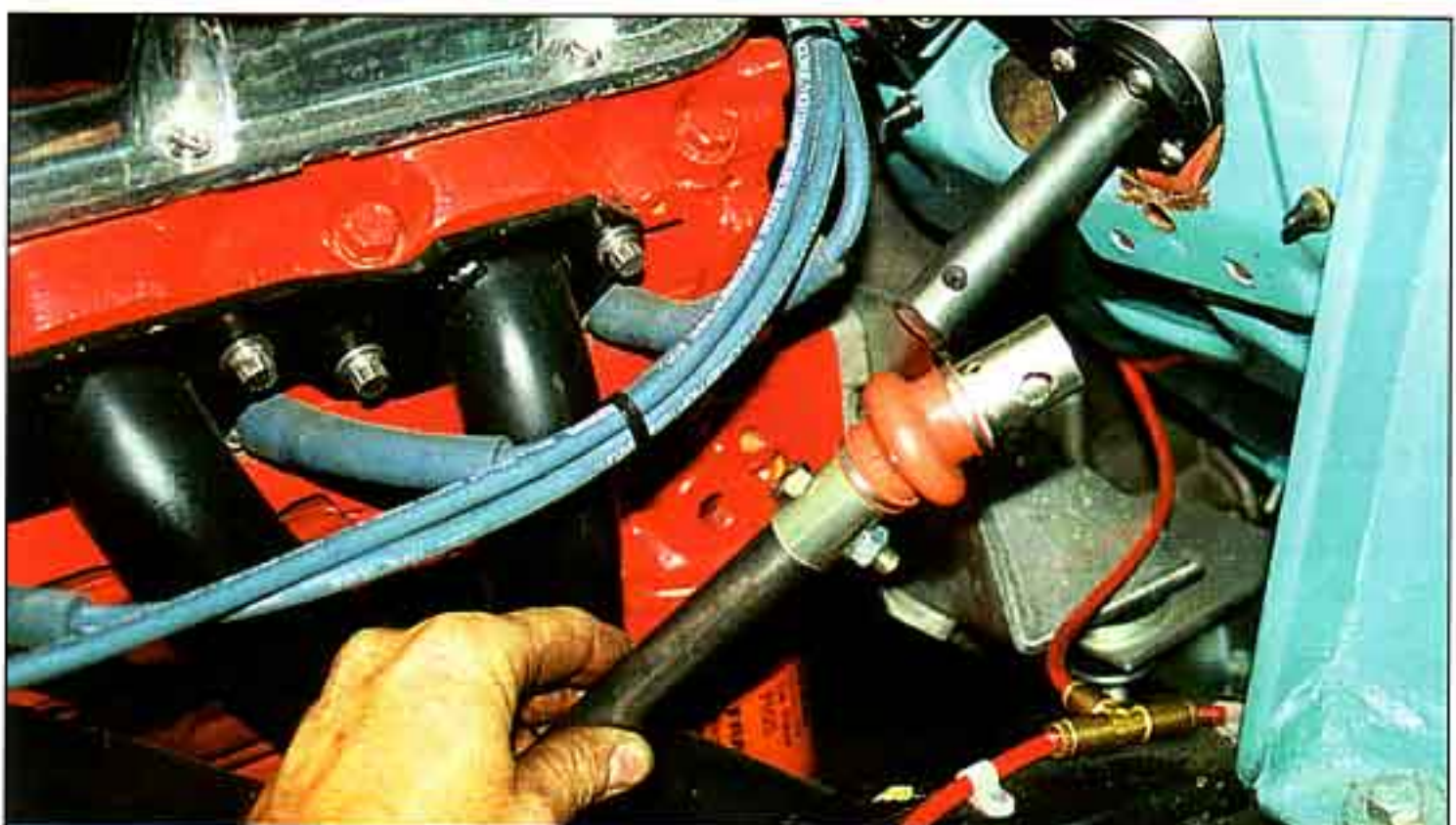


Photo #28a

The shaft from the rack and pinion is a 6mm double D. The coupler shaft has a weld-on U-joint with two sets of screws at the end where it will attach to the rack and pinion. Make sure not to slide the lower U-joint on to the shaft too far, or it will bind. There is a coped out area on the shaft from the rack and pinion where one of the sets of screws will fit (see photos #24a & 24b). Now place the upper U-joint back onto shaft from the steering column (see photo #25).

The shaft from the lower U-joint will need to be cut to length. Lay the shaft next to the upper U-joint and mark just at the bottom of the orange boot. Cut the shaft at this mark, so it will fit all the way up in the lower half of the upper U-joint (see photos #26a & 26b).

Now remove the upper U-joint from the steering column shaft and drill and pin the U-joint to the lower shaft (see photos #27).

Now attach the lower U-joint back to the rack and pinion. To attach the upper U-joint, the column will need to be pushed back in the cowl and lined up. Then it slide back into the upper U-joint (see photos #28a & 28b).

There will plenty of clearance for the steering column shaft, even with headers! We found that by only using an upper and lower U-joint it keeps the rack and pinion kit a simple and clean appearance (see photo #29). Good luck! ✓

Next month we will finish up with the installation of the power steering pump, hoses and pulleys.

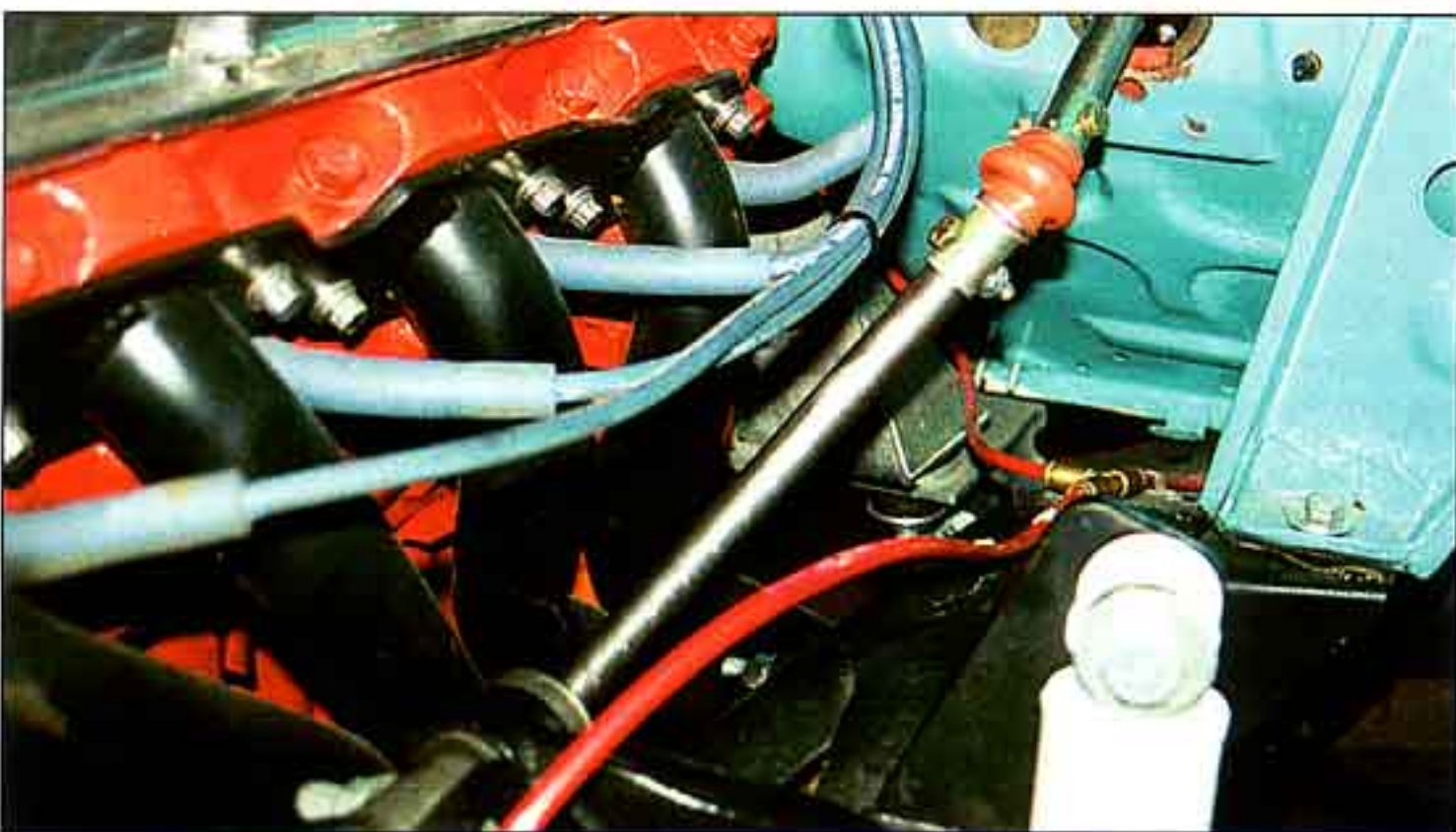


Photo #28b



Photo #29

Rack & Pinion Update with Tubular Crossmember, 1955-57

Part 2

Randy Irwin

This updated article shows the installation of our Rack and Pinion system with the new tubular crossmember on a big block 1955-1957 (installation on a small block is very similar). If you are installing the complete Rack and Pinion kit, part #53-226, for the first time, or just want a update, the tublar crossmember is a great component for your Classic!

Time Frame:

8 Hours

Tools Needed:

Engine hoist
1/2" Wrench
9/16" Wrench
3/4" Wrench
11/16" Wrench
9/16" Socket with ratchet
Screw driver

The engine of our 1955 has been installed using our Big Block Installation kit, **part #18-200**. The left front, driver's side mount has two 7/16" holes just to the left of the harmonic balancer (**see photo #1**). The power steering pump bracket bolts in front of the left front engine mount, so the two bolts that hold the mount to the engine need to be removed. Attach a chain to the cylinder head and hoist it up slightly with an engine hoist or other lift in order to take some of the load off the other engine mount. Next, the two 7/16" x 1 1/4" bolts and lock washers can be removed (**see photo #2**) and the powersteering pump bracket (included with the Mega Rack and Pinion Kit, **part #53-125**, or sold separately **part #53-70**) can be bolted into place. The engine can now be set back down (**see photo #3**). The back of the power steering pump (**part #53-28** if purchased separately) has a 3/8" nipple for the return hose, a 3/8" inverted flare fitting for the pressure hose, and two 3/8" studs for mounting purposes (**see photo #4**). The lower stud on the back of the pump will fit into the inner groove of the pump bracket and be held in place with a 3/8" nut and lock washer (**see photo #5**). The front of the pump will have one treaded hole that lines up with the hole in the pump bracket. Using a 3/8" x 1" bolt and lock washer, bolt the pump into place (**see photo #6**). The upper stud on the back of the pump is for the belt adjustment. The adjusting bracket that comes with the kit, or sold separately, **part #53-29**, is slotted on

#53-226



Parts Needed:

- 53-125** 55-57 Deluxe power rack and pinion kit, small block
- 53-126** 55-57 Deluxe power rack and pinion kit, big block
- 53-225** 55-57 Mega power rack and pinion kit, small block
- 53-226** 55-57 Mega power rack and pinion kit, big block



Photo #1



Photo #2



Photo #3

the pump end and uses a 3/8" nut and a flat washer to hold the pump into place (see **photo #7**). The other end of the bracket attaches to the lower water pump bolt on the driver's side (see **photo #8**).

The power steering pump pulley is held to the pump is held to the pump with a 5/8" SAE nut (see **photo #9**). The lower pulley has two grooves. The first is the crank shaft, water pump, and alternator and the second groove is the crank shaft, water pump, and AC compressor (see **photo #10**). GM added a single groove pulley to the double groove pulley on the crank shaft to make three tracks. This pulley will fit inside the double groove pulley and key into place (see **photo #11**). The pulley is held to the harmonic balancer with the same three 3/8" x 1" bolts that hold the two groove pulley in place (see **photo #12**).

The power steering pump belt fits onto the center groove of the power steering pump pulley (see **photo #13**). When using our heavy duty steel fan blade, **part #51-04**, a 1/2" fan spacer, **part #51-18**, will be needed to give proper clearance between the blade and the power steering pump pulley (see **photo #14**).

The pressure hose for the Rack and Pinion has an original fitting on one end and a 3/8" flare nut on the other. The large fitting on the rack and pinion is where the original end of the hose will attach (see **photo #15**). The flare nut will attach to the



Photo #4



Photo #5



Photo #6



Photo #7



Photo #8



Photo #9

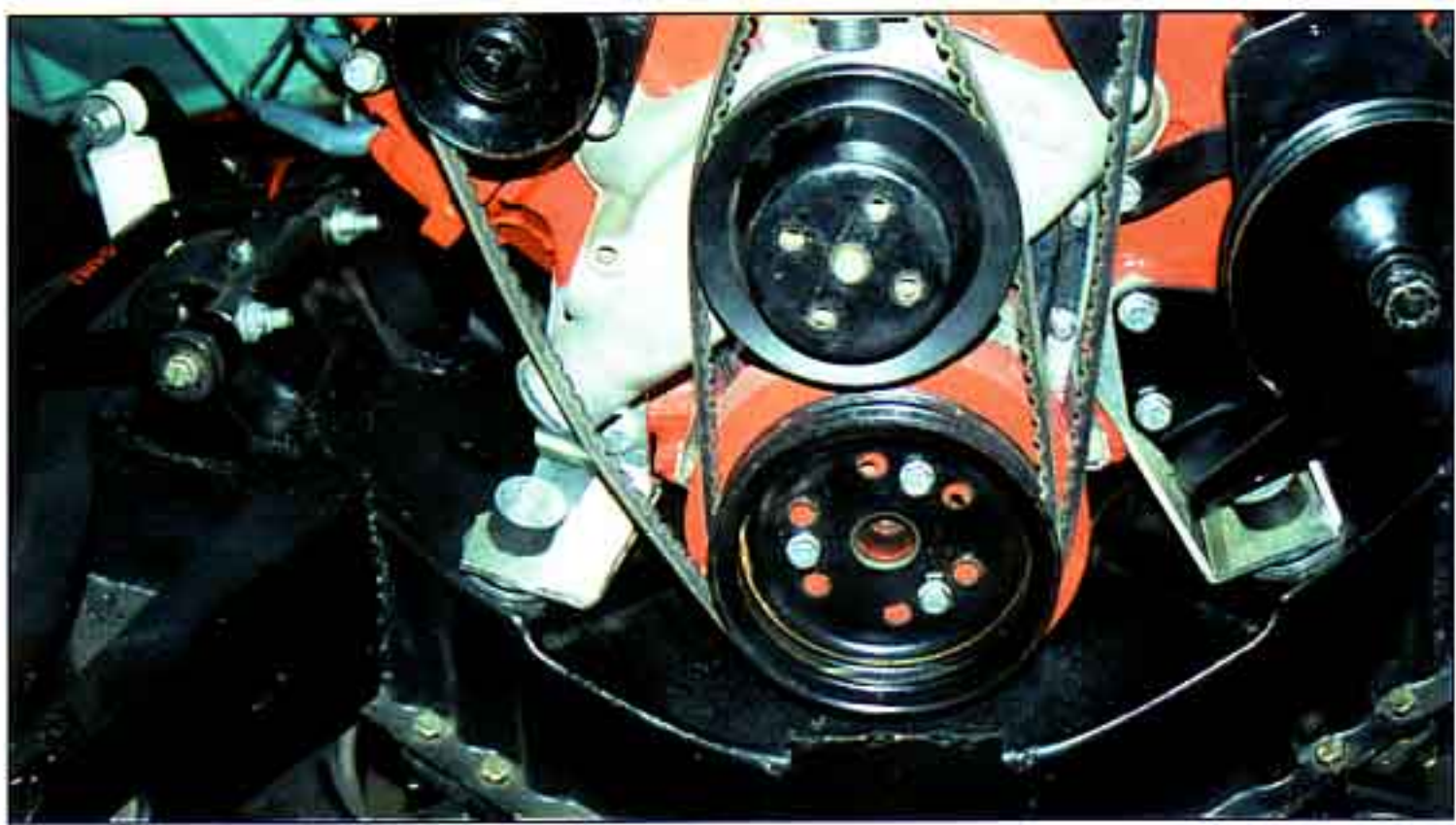


Photo #10



Photo #11



Photo #12

back at the power steering pump and has a 45° bend to clear the exhaust and keeps the hose tucked up tight to the block (see **photo #16**).

The return hose has an original fitting on one end and an adjusting hose on the other end. The small fitting is where the return hose will attach on to the rack and pinion (see **photo #17**). The return hose attaches to the 3/8" nipple on the back of the power steering pump (see **photo #18**).

Now that everything is attached, fill the power steering pump with fluid and start the engine to check for leaks. Turn the steering wheel side to side and make sure that the coupler shaft does not bind at the tie rod ends. When doing this conversion a complete alignment will be needed. We recommend 2½° to 3½° positive caster on each side of the car, 0° camber on the driver's side, ¼° camber on the passenger's side, and 1/8° toe in. If the caster and camber adjustments can not be obtained, there is a replacement upper tubular A-arm, **part #21-134**, available that uses the stock ball joint and has 5° of positive caster built in.

The rack and pinion steering kit with the tubular crossmember not only enhances the performance of your Classic's steering, but it simplifies your engine compartment allowing you room for more upgrades and improvements—it's the icing on the cake!

Good luck! ✓

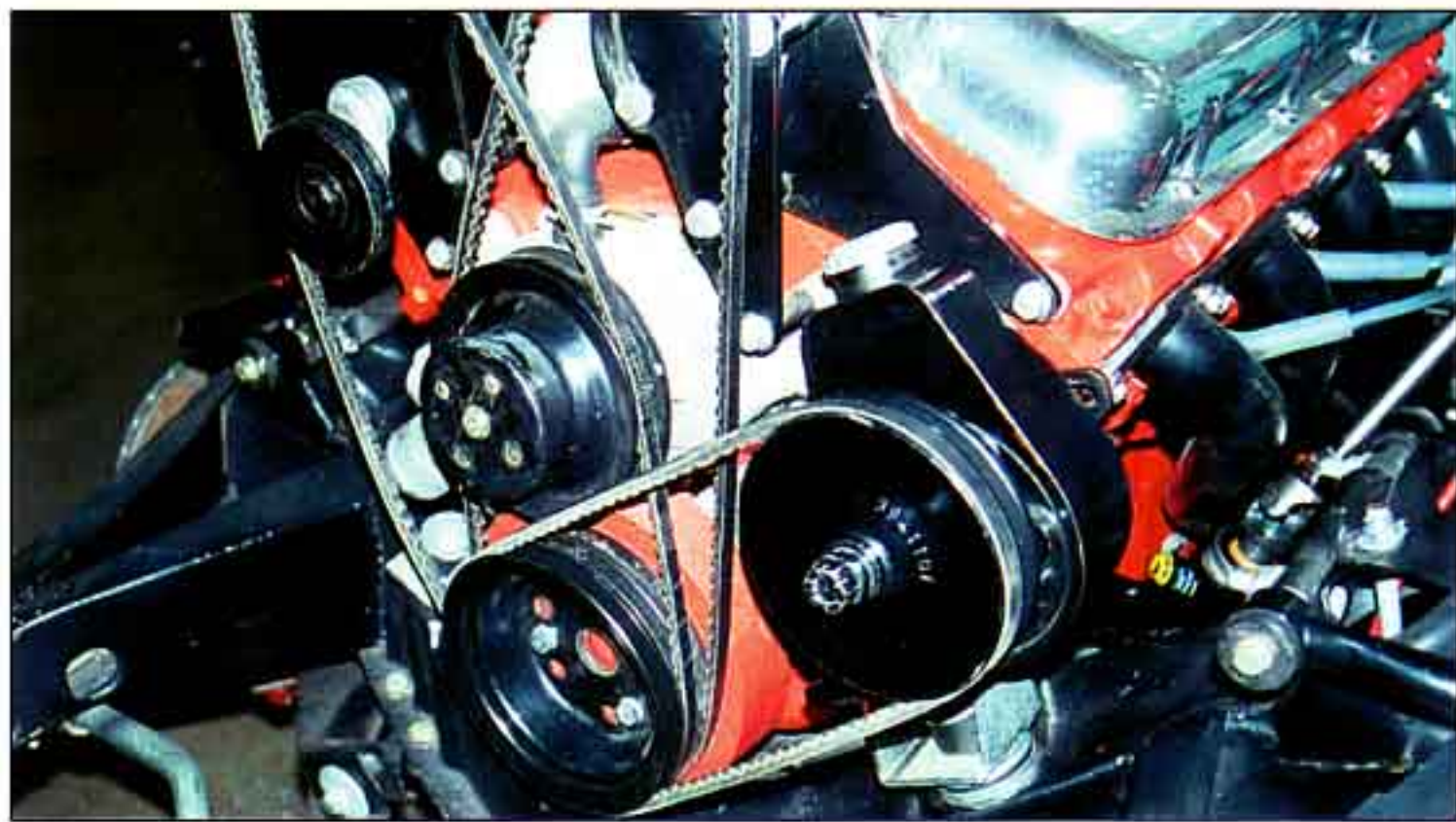


Photo #13

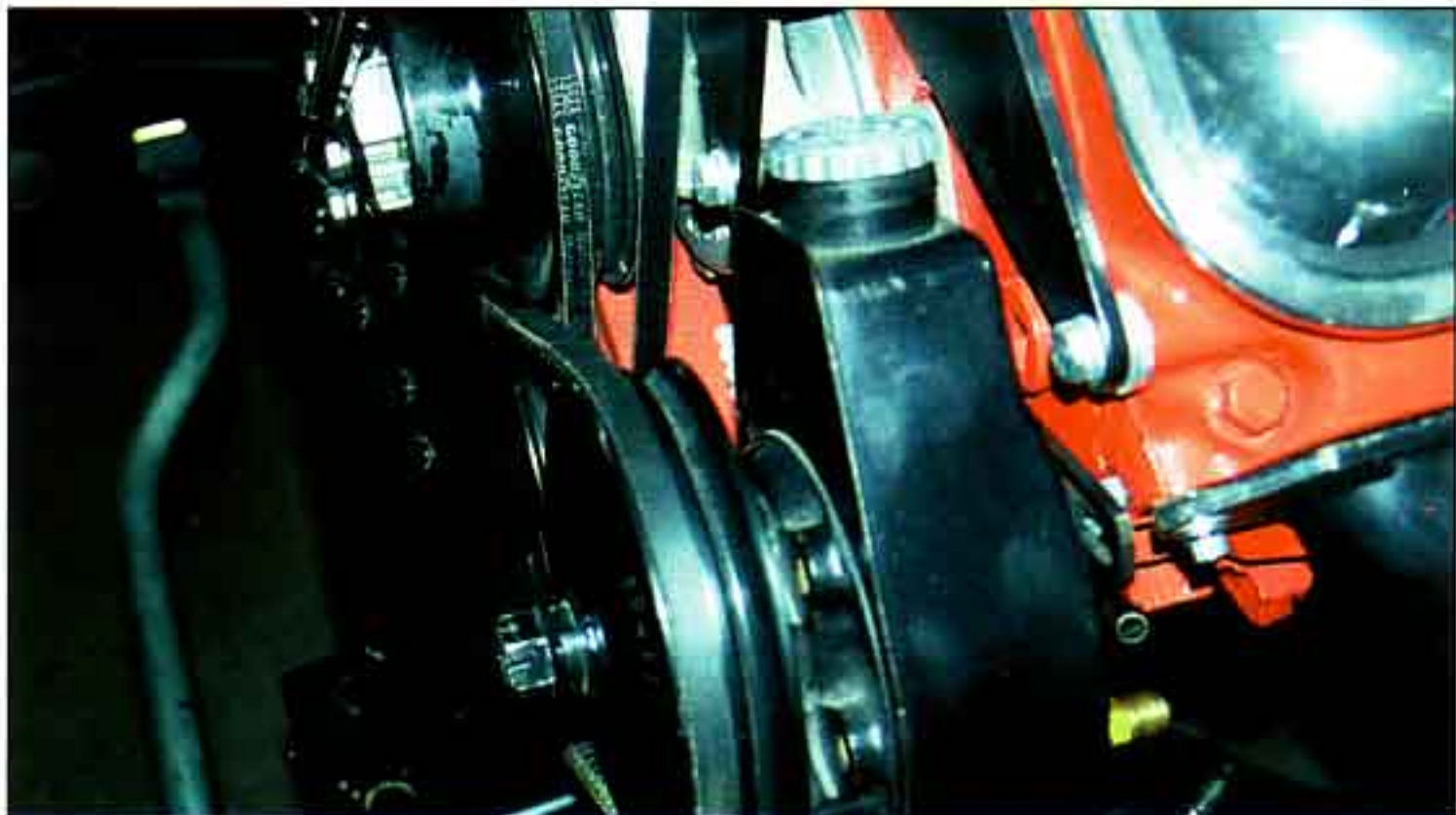


Photo #14



Photo #15



Photo #16



Photo #17



Photo #18