Moser Engineering C5 Corvette Rear Sub Frame Assembly

The following instructions are for the Moser Engineering rear sub frame kit in the C-5 Corvettes. This kit was primarily designed for NHRA Stock Eliminator classes but can be adapted for other uses.

Since the C-5 Corvette is designed to be an independent rear with a transaxle, modifications must be made to the transmission tunnel, torque tube tunnel and upper rear control arm mounts to facilitate this installation. These modifications must be done in advance of the installation of this kit. The lower portion of the rear frame rails directly above the rear end housing may need to be C notched for adequate clearance. The stock fuel tanks and lines need to be removed as well.

The following instructions pertain to the installation of the rear sub frame assembly, forward torque arm mount and the associated parts required completing this installation.

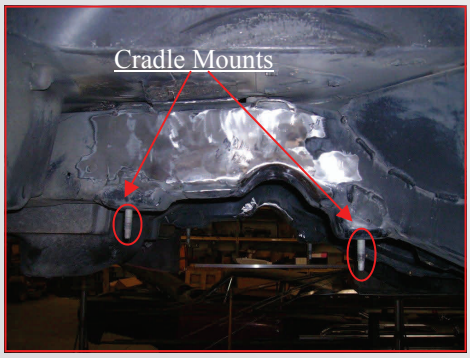
The vehicle must be supported by the chassis structure as close to the corners as possible.
It must be level front to back and side to side.

During disassembly you must save all attaching hardware, as it may be needed during reassembly.

102 Performance Drive | Portland, IN 47371 | 260.726.6689 | 260.726.4159 Fax | info@moserengineering.com | www.moserengineering.com

Step 1

As stated earlier, the rear upper control arm mounts and upper shock mounts will need to be notched or removed to facilitate the installation of the rear sub frame. The rear sub frame must fit solidly against the four rear cradle mounts with no interference with any of the existing control arm or upper shock mounts. Use the four OEM cradle nuts to attach the sub frame to the chassis.

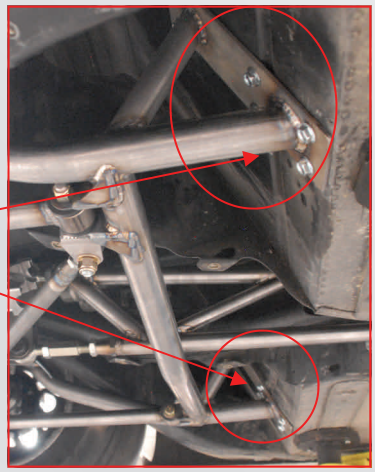


Step 2

The front sub frame mounts attach through the rear firewall using the supplied hardware.

12 3/8"x3/4" self locking bolts and 6 3/8" nut plate assemblies are used during this process. The forward mounts must contact the rear firewall. You may need to raise or lower the front mounts to make contact with the rear firewall. They must also be level from side to side. Once level and contacting the firewall, drill through the rear firewall using the 6 holes in each forward mount using a 25/64" drill bit. The bolts go through the forward mounts and thread into the nut plates inside of the rear firewall. It is recommended to weld the nut plates to the inside of the rear firewall once the bolts are securely tightened.

Sub Frame Mounts

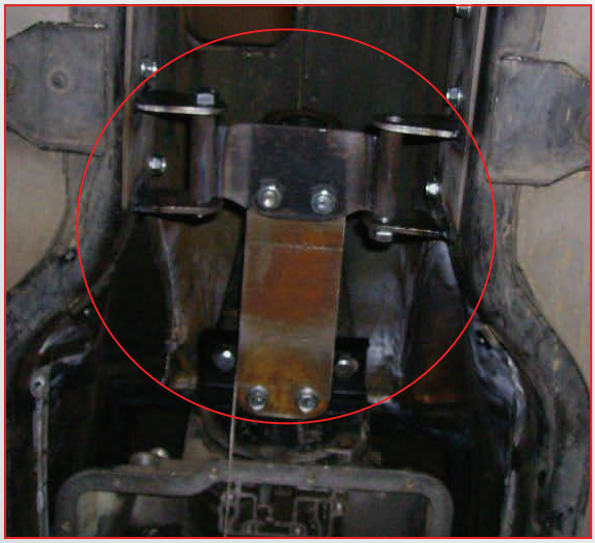


Step 3

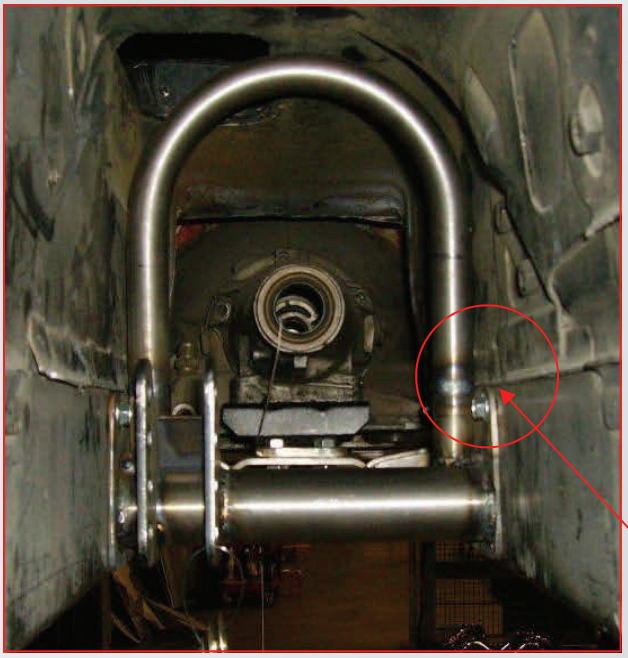
The front torque arm mount is designed to be located using a Turbo 400 transmission. With the transmission bolted to the back of the engine (engine must be in the stock location) and either a rubber or polyurethane mount installed on the transmission. The transmission cross member has a ¼" offset to the passenger side of the car.

Step 4

With this in mind, bolt the entire assembly to the transmission mount (the crossmember bolts directly to a Turbo 400, there is an adapter supplied if you are using a Turbo 350 or a powerglide).



There is a sheet metal ledge in the torque tube tunnel; the top of the mount assembly is designed to touch the bottom of the sheet metal ledge.

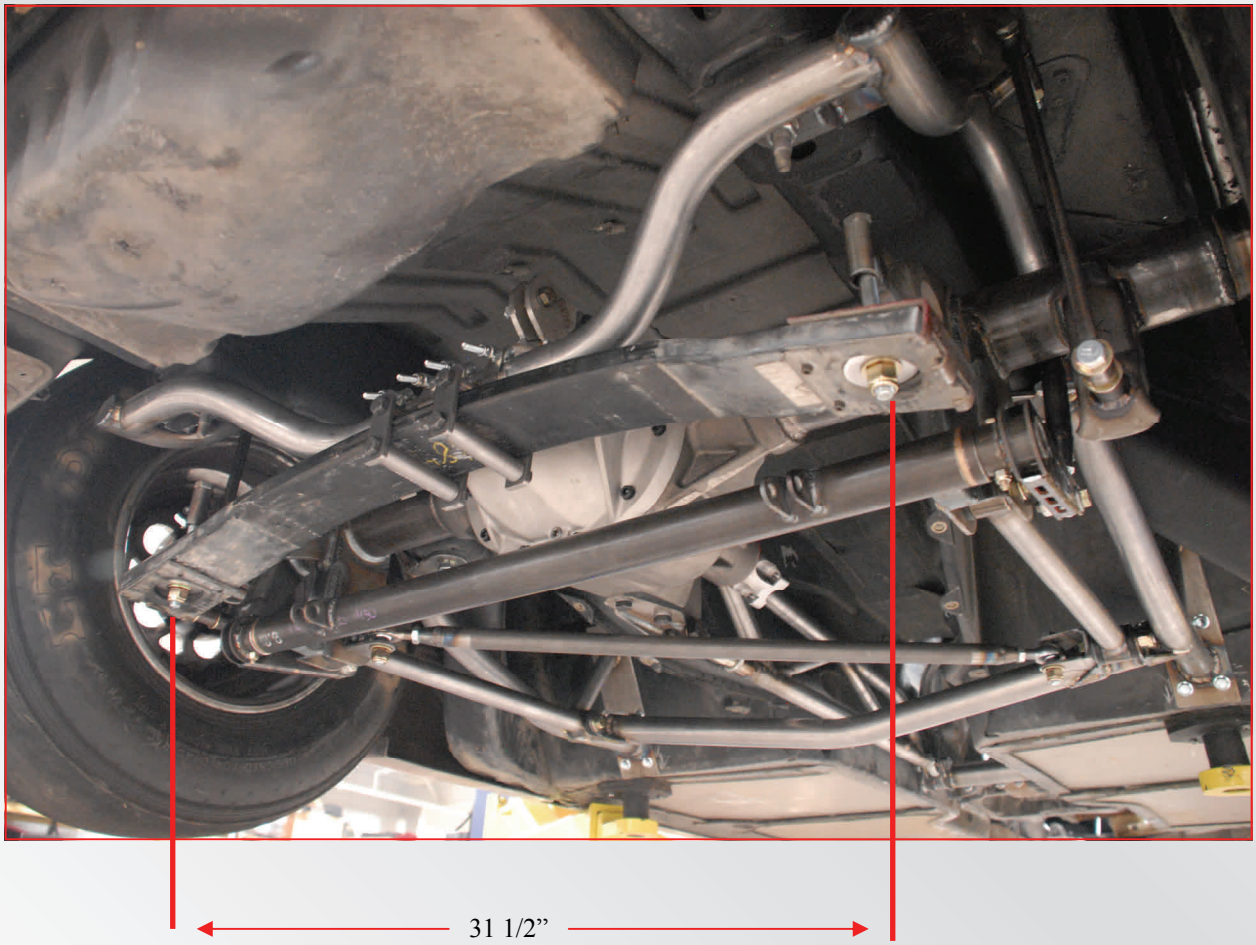


Step 5

There are 8 5/16”x3/4” self locking bolts and 4 5/16” nut plates supplied to attach this assembly to the torque tube tunnel. Raise or lower the transmission until the top of the mount assembly touches the bottom the sheet metal flange. Drill through the torque tube tunnel using the 8 21/64” holes as a guide. The bolts go through the assembly with the nut plates on the inside. As with the rear firewall nut plates, it’s recommended to weld these to the tunnel once the bolts are secured.

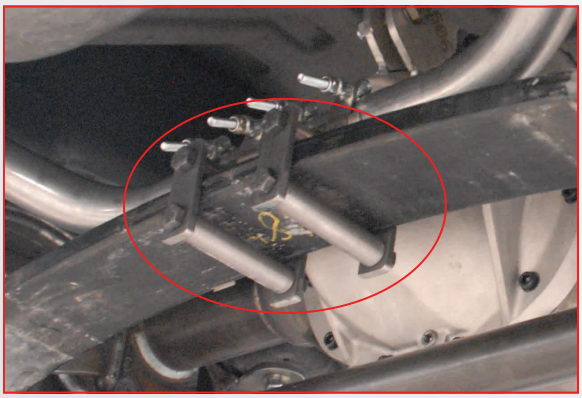
Step 6

The leaf spring needs to be modified to fit this package by moving the outboard mounting points in on the leaf spring. Start by removing the OEM rubber mounts that are glued to the leaf spring. Drill out the 4 rivets that hold the steel outboard mounts to the spring. Save these parts as they need to be re installed on the spring. Measure from the end of the spring to the center of the 2" hole in the spring. Record this dimension; you'll use it to cut the spring to the proper length later. The spacing on the outboard spring mounts is 31 ½".
The measurements need to be taken square on the spring, if you measure along the arc of the spring, you'll be too short. Find the center of the spring measuring square to the tips of the spring and measure out 15 ¾" each way. At that point on each end of the spring, find the center and drill a 2" hole with a hole saw on each end. Using the previously recorded dimension measure out from the new hole on each end and mark the spring. This is where you'll cut the spring so that you can re install the outboard mounts. Drill all the way through the old rivet holes. Use 8-32 screws to attach the outboard mounts to the spring. The spring may need to be narrowed to allow for the proper preload. Too wide of a spring will not allow for enough stored energy in the spring, not enough stored energy will not allow the car to plant the tire properly.



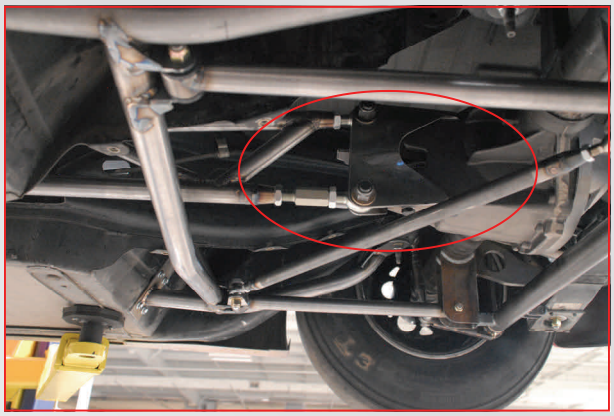
Step 7.

There are two spring saddle assemblies supplied that attach the spring to the sub frame. They are adjustable so you can change the spring rate of the rear spring. They clamp to the rear crossmember of the sub frame using the 4 band clamps included in the kit. Start with the saddles clamped on each side of the centerline of the crossmember to start. Sliding them farther increases the spring rate. They can be adjusted out individually so that you can pre-load the car with the rear spring. Install the spring into the saddle assembly. Use Blue Locktite on the threads of all of the 7/16" bolts in the saddle assemblies

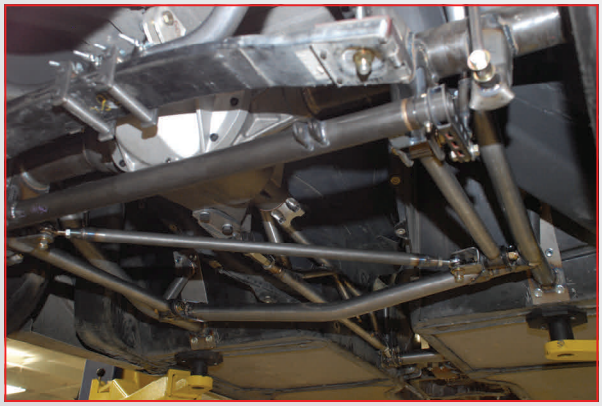


Step 8.
Install the torque arm adapter bracket to the housing using the 4 supplied 1 ½"x ½"NC bolts and locking washers. It is highly recommended to use Red Locktite on these 4 bolts.

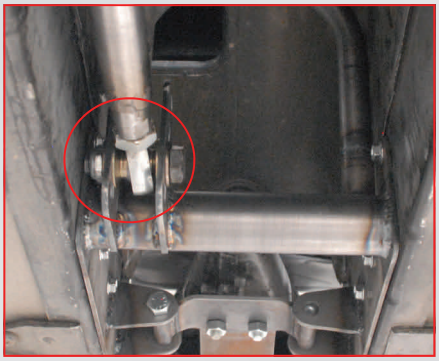
The torque arm has a 9" piece of tubing that slides in and out of the front to allow for rear suspension movement. It's called a "slider tube". It must be kept lubricated at all times to allow the rear suspension to move freely. Thread the 5/8"x3/4" moly heim fully into the threaded end of the slider tube. Make sure you tighten the jam nut on the heim against the slider tube. Grease the slider liberally and insert it into the front of the torque arm. The rear of the torque arm has 2, ¾"x3/4" solid rod ends and 1, ¾"x3/4" pinion adjuster. The jam nuts need to be set to allow easy installation of the torque arm to the adapter bracket. The jam nut needs to be 7/8" back from the end of the pinion adjuster and the solid rod ends. Thread the respective parts into each other until the jam nut makes contact. This is a preliminary adjustment only. Final adjustments will need to be done at the end of this project. Use never seize on the threads of all of these parts! After the pinion adjuster and the solid rod ends are assembled to the back of the torque arm install the torque arm to the adapter bracket using the 2 ¾"x2 ¾" bolts, 4 ¾" flat washers and 4 ¾" ny-lock nuts.



Step 9.
At this time you can install the housing assembly into the car. Slide the torque arm over the rear crossmem-ber towards the front torque arm mount. Attach the housing assembly to the rear assembly with the lower control arms and the supplied hardware. There are 4, 2 ¾"x1/2"gr 8 nf bolts, 3 ½" top lock nuts, 2, ½" flat washers and 2 track locators (one has a ½" nut welded in side, it goes on the left rear). Bolt the lower control arms to the sub frame first. One of the track locator clevises goes on the right front. Slide the washer on the bolt, bolt through the tab on the left side into and through the assembly and install the ½" top lock nut. On the right side the bolt slides through the track locator clevis and then through the tabs and control arm. The top lock nut then goes on the out-side. On the rear, the washers slide onto the bolts and install from the outside in. the track locator clevis with the nut welded in it goes on the left rear, a top lock nut goes on the right rear.

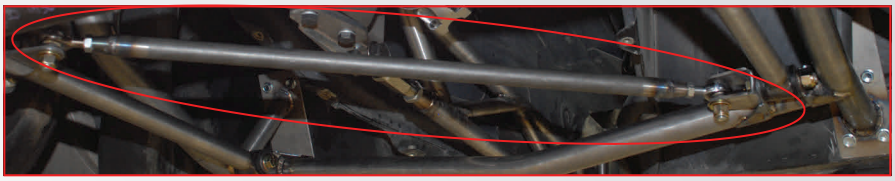


The slider tube is attached to the forward mount with the 5/8"x2 ¾" bolt, 5/8" flat washer, 2, 5/8" safety washers and nylock nut. The flat washer slips on the bolt, the bolt slips through the bracket and first safety washer, then through the heim in the end of the slip tube, then the second safety washer and outboard bracket. Install nylock nut on the bolt.



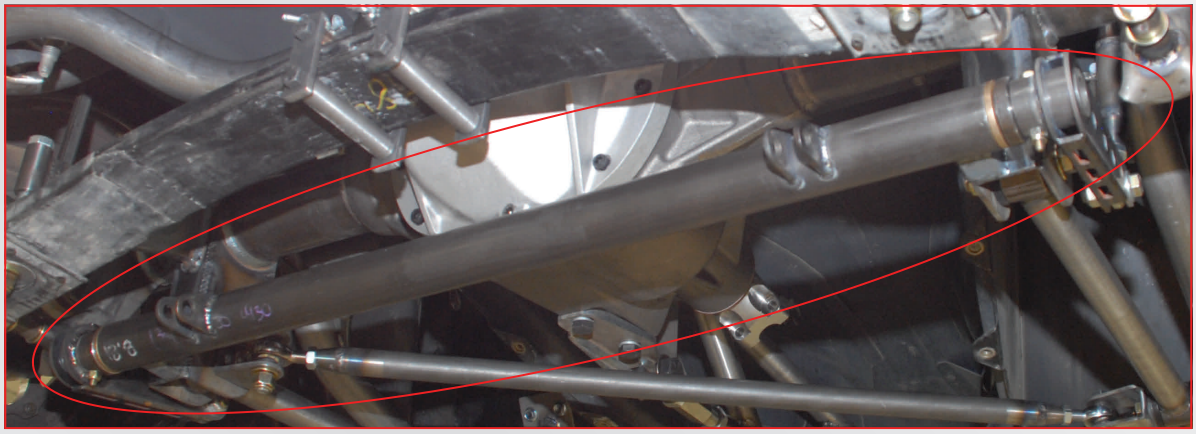
The shocks are held on with 4 ½"x1 ½" NF gr 8 bolts and 4, ½" flat washers. The washer slips on the bolt, bolt goes through the shock end and bolts to the shock mount. Do this 4 times.

Step 10.
The track locater is a 28" long bar that has a left hand tube adapter on one end, right end on the other. It acts like a turn buckle; its purpose is to locate the rear axle assembly properly in the car. The hardware kit for the track locater includes 1, ½" RH heim and jam nut, 1, ½" LH heim and jam nut, 4, ¼" tubing spacers (1/2" ID), 2, 2"x1/2" nf gr 8 bolts, 4,1/2" flat washers and 2 ½" nylock nuts. Thread the ham nuts on their respective heims ¾". Apply never seize to the threads of the heims and insert them into the respective ends of the track locater bar. In-stall the bar between the clevises.

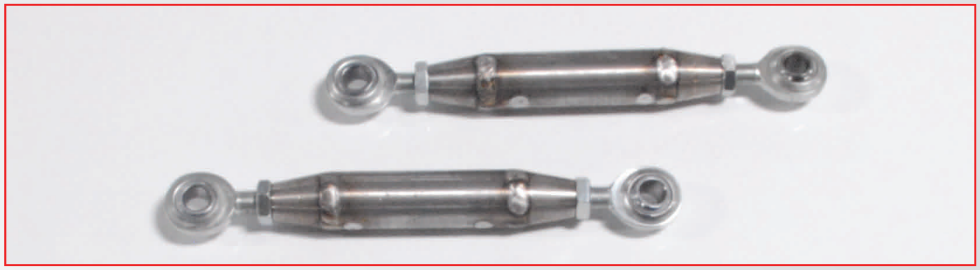


The ½" bolts slide through a washer, one side of the clevis, one of the ¼" spacers, the heim, another ¼" spacer and then through the other side of the clevis. Then install another flat washer and a ½" nylock nut. Once you're finished with the assembly, shortening the rod will move the rear to the right, lengthening it will move it to the left. The purpose is to center the wheels in the openings from left to right. Make sure you tighten the jam nuts once the adjustments are finished.

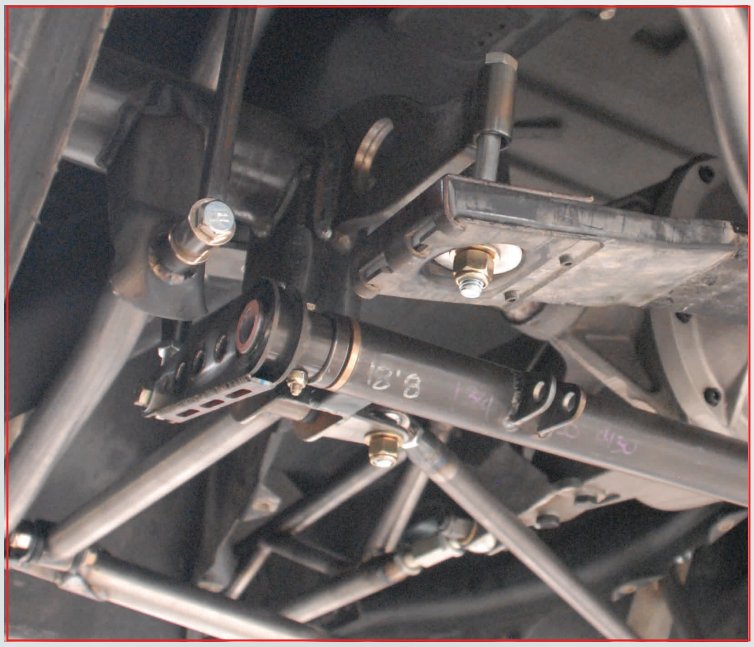
Step 11.
The anti roll bar and associated hardware is next. Included in the package are; t bronze oil lite bushings, 1,1 ¼'x.250 anti roll bar, 2 anti roll arms, 2,1/4"x2" nf gr 8 bolts, 2 ¼" nf nylock nuts, 2, 5" long anti roll adjusters, 2 7/16" RH heims and jam nuts, 2 7/16" LH heims and jam nuts, 4, 7/16"x1 ½" nf gr 8 bolts, 8, 7/16" flat washers and 4 7/16" nf nylock nuts. The anti roll adjusters work the same way the track locator does. Thread the respective jam nuts on the heims ¾". Apply never seize on the threads of the heims.



Thread the heims in the respective ends of the anti roll tubes until the jam nut contacts the tube end. The bushings slide into the 1 ¾" tube welded to the bottom of the lower control arm brackets on the back side. The 1 ¼" bar is then installed through one end of the tube, through both bushings. There are dimples on each end of the 1 ¼" bar. There are corresponding dimples on the outside of each anti roll arm. Make sure you match the corresponding dimples; it assures the anti roll arms are parallel when finished. Once everything is in its respective place, install the ¼"x2" bolts through the arms and bars. Finish by installing the ¼" nylock nuts. One of the anti roll adjusters attaches to the anti roll arm on each side of the housing the other ends attach to the anti roll tabs on the sub frame. Washers go on each side of the anti roll arm, bolts go through that and is finished off with the nylock nuts.



Step 12. The previously modified leaf spring is attached to the housing by the 2 ½"x 6 ½" NF gr 8 bolts and nylock nuts. Use the original lower spring isolators on the bottom of the spring. The bolts go through the mount on the housing, then through the mount on the spring. The existing isolators go on the bottom then the nylock nuts. Small adjustments in height may be made by changing the position of the nut on the bolt threads. Larger height adjustments can be made by changing the bolt length.



The brake lines and associated hardware is up to the customers discretion.

The rear spring may need to be thinned down between mounting points to adjust the spring rate. This will need to be done at the customer's discretion.

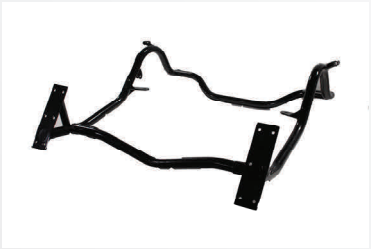
When the car is completely assembled and sitting at ride height, the lower control arms need to be level.

1 degree of downward pinion angle is recommended, however this up to the customer's discretion as well.

The anti roll adjustment will be set to neutral to start. Add preload as needed.

Parts and hardware list

C5 12 Bolt assembly



C5 Sub frame assembly

Slider tube
Heim-73416MHJ
Jam nut-73416JNR

Torque arm mount

Torque arm assembly

Anti roll adjusters

Anti roll bar

Anti roll arm

Spring saddle
clamp and tube

Spring clamp

Track locator bar

Bolt-19929
Nut-36405
Plate-PT0297

Bolt-19916
Nut-36403
Plate-PT0288

Front track locator bracket
Bolt– 18217
Nut-18226
Washer-33800

Rear track locator bracket
Bolt-18217
Washer-33800

Bolt-713365XX
Washer-733802X
Top lock Nut-5/8
Safety washer-
7SW58AX

Bolt-14209
Nord-lock washers-162566

7/16 Heim left & right hand
7/16 Jam nuts

Heim-734165RE
E-7651400X
Jam nut-73416JNR
Jam nut-73416JNL

Heim-734163RE
Jam nut-73416JNR

Heims 1/2 left and right
Jam nuts– 1/2 left and right

Bolt –718365XX
Nut– 737570XX
Washer-733803XX

Bolt-18011
Nut-317564

Bolt-3/8 x 3 1/2”
Nylock nut-3/8

Bolt-18159
Washer-33166
Nut– 7/16 Toplock

Bolt-14209
Washer-33800
Toplock Nut-18226

Bolt-18217
Toplock Nut-18226
Washer-33800

Bolt-7/16 x

Bushings FF1507-2

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