



IMPORTANT INFORMATION!

- 1** Read these instructions fully before starting your installation.
- 2** MEASURE TWICE, WELD ONCE!

1 Preparing the Vehicle

Jack up the vehicle and support it with jack stands. Place the jack stands directly behind the firewall on the main floor area. Do not support the car from the front sub-frame. Remove the hood and its hinges. Remove the front wheels and disconnect the wiring to front components- headlights, parking lights, turn signals etc. Remove the front bumper and its brackets, then remove the front fenders and the grill. Remove the core support and radiator, followed by the engine and transmission. Remove the factory sub-frame and inner fender panels. Remove the old steering box and steering column. The original steering column can be used with the new rack and pinion suspension with some modification, but the original steering box will not be used. **NOTE: Be sure to hold on to all the bolts from these components as they will be re-used later.** Raise the subframe into place in front of the firewall. **See Figure 1.** Line up the holes on the new subframe to the holes in the firewall and bolt on using the original bolts and lock washers, then tighten the bolts. Install the upper firewall support tubes from the front rails to the mounting areas on the firewall, using the original fender panel bolts. If there is a gap, shims can be installed at this point. You can also bolt it tight now and wait until the fenders are reinstalled to determine the correct shims for the final sheet metal alignment. Install the engine and transmission back into the vehicle and check the oil pan clearance if you are using a deep sump pan.

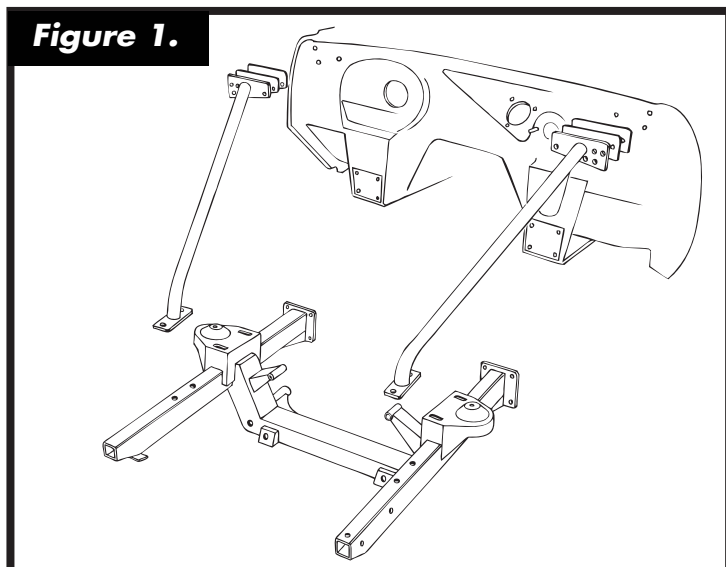
2 Assembling the Components

Continue the installation of the rest of the [suspension components](#). **See Figure 2.** Install the upper and lower control arms. Place the coil springs up into the spring pockets and bring the lower arms up to them. Install the shocks by placing the first washer and rubber mount on the shock stud and sliding them up through the lower arms and install the long bolts through the lower arms and shocks.

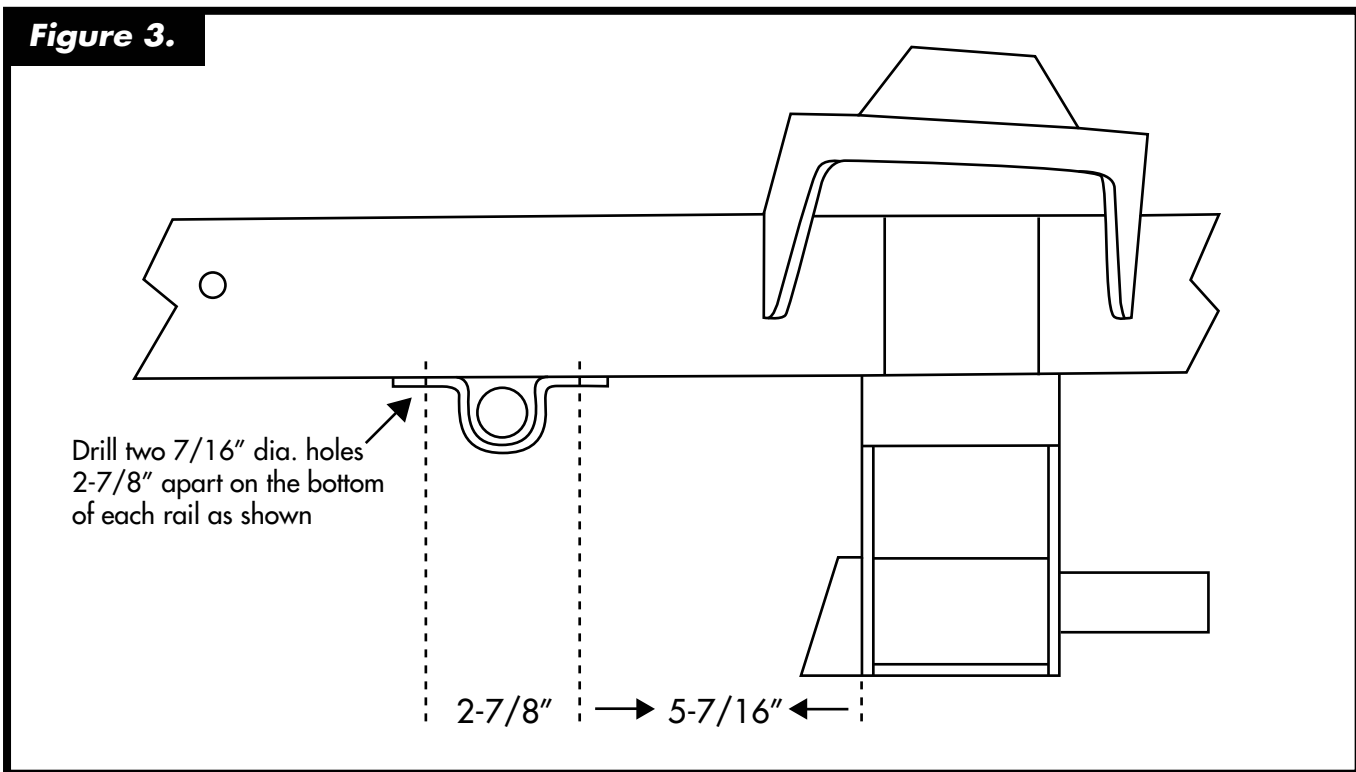
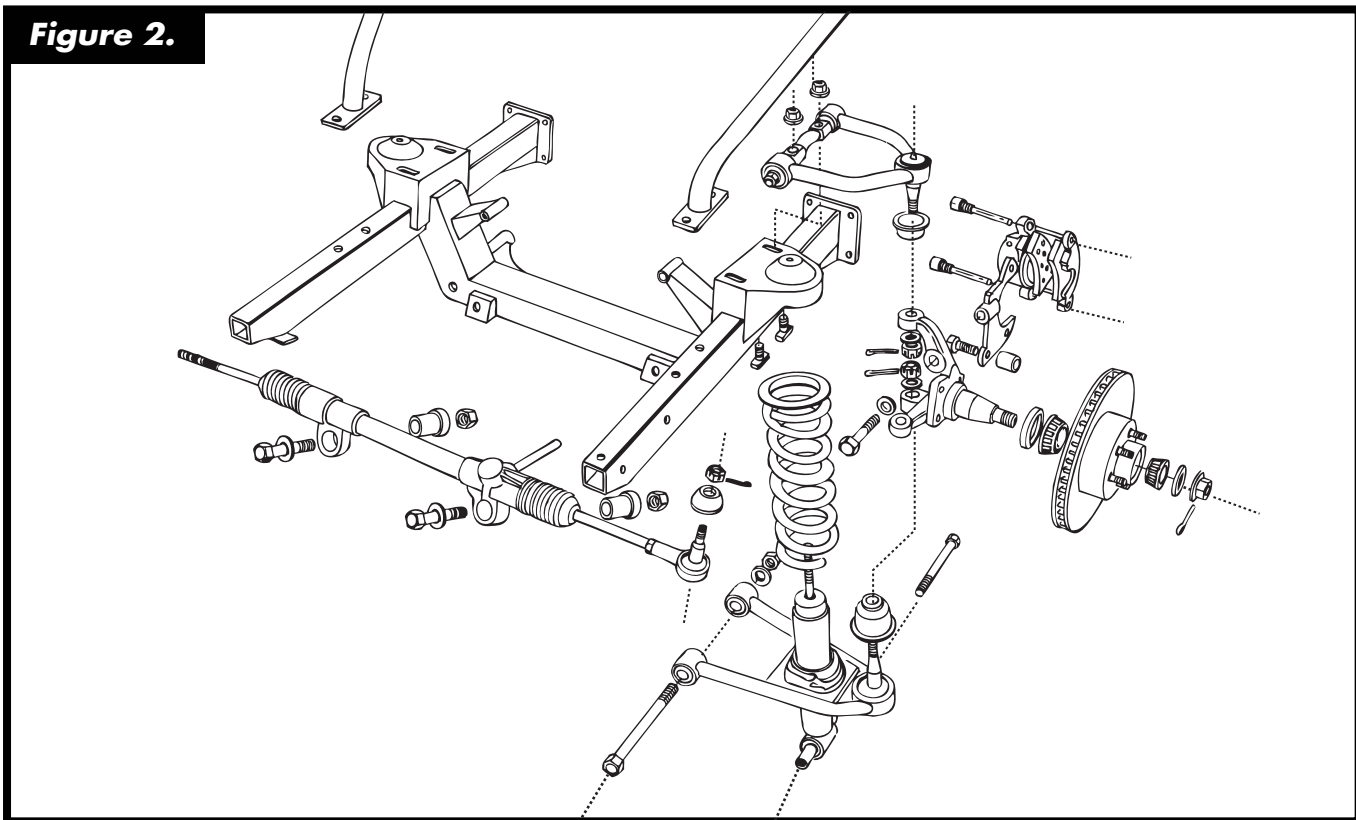
Using a floor jack under the lower ball joint, raise the lower arms up into position and compress the springs. As the lower arms are raised, attach the upper rubber mount, washer and nut on top of the shocks when they come through the upper shock mount cups. Install the spindles onto the lower ball joints and then install the upper ball joints into them. Now install the rack and pinion assembly using the two 5/8" bolts, washers and lock nuts supplied. Install the tie rod ends onto the rack and into the spindle arms. Estimate the alignment, then install the rotors and calipers. If a sway bar was purchased, install it next. Drill two 7/16" diameter holes in the underside of each rail. **See Figure 3.** Install the U-bolts from the sway bar into the frame through the holes you just drilled. Slip the mounting brackets and bushings onto the sway bar at attach the bar to the rails. Attach the links to the ends of the sway bar and to the lower control arms. Finally, install the core support and the radiator, followed by the front fenders and grill. **NOTE: The shims may have to be adjusted at the upper mounts to align the front fender gap at the doors.** Install the front wheels and place the vehicle on the ground. The lower control arms should be level. If the vehicle is still too high after allowing some time for the springs to settle, the springs may need to be cut. Cut only a quarter of a spring coil at a time, checking the height as you go. Set the caster, camber and toe-in as follows:

Caster: $7/8^\circ \pm 3/4^\circ$
Camber: $3/4^\circ \pm 1/2^\circ$
Toe-In: $1/8" \pm 1/8"$

Figure 1.



1962-1967 CHEVY NOVA SUB-FRAME



Remember: Measure twice, weld once!

1 Determine Correct Center Line:

If original suspension still in place:

A. Transfer centerline of spindles with vertical line onto side of frame rails.

Note: The maximum standard frame width that will fit between springs is about 30". If your frame is wider than that, it will need to be C-notched for springs. If you still have original suspension on frame, it must be removed at this point.

If original suspension is not in place:

A. Position a fender in place on the frame, then stand the front wheel with tire in place of the fender.

B. Slide a tube or other straight implement straight through wheel center.

C. Mark a vertical line at location where it contacts the frame.

D. Place spindle centerline in center of fender opening. At this point the spindle centerline is in center of the fender opening.

E. Now that you have the spindle centerline, measure the width of frame at that point. The maximum standard frame width that will fit between springs is about 30". If your frame is wider than that, it will need to be C-notched for springs. If you still have original suspension on frame, it must be removed at this point.

2 Determine Vehicle Ride Height

Determine ride height of front suspension and of entire car, as frame must also be set at correct rake that the finished car will sit.

A. Adjust height of frame, or entire car, to the desired height, and then support frame on jack stands with shims at this height.

B. Check height of spindle by using your set-up wheel, compared to height of frame rail at axle centerline.

C. Mark actual spindle centerline height on side of frame rail (*Note* : subtract 1/4" from centerline location for flattening of tires under pressure). If it comes through the wheel below the frame rail, then temporarily tape a piece of cardboard to side of rail to mark centerline on. Please note the bottom of the frame should be no lower than one inch below spindle and the top no more than four inches above the spindle. At this point you can adjust ride height of your car within this range, if your frame is smaller than these dimensions (See Figure 1). You can also adjust the position of the crossmember, and the frame, with 2" Dropped Mustang II Spindles, if the frame does not fall within this range. Note that if frame is more than 1/2" below spindle, it will need to be C-notched for rack boots if you do not use dropped spindles. Also note that if you have a thicker frame, remove a 12" long section off and box in top of the frame for spring tower and upper control arm clearance. Later steps will determine the depth of the section to be removed.

3 Crossmember Cuts & Mounting

For proper installation you need to determine the inner width of the boxed frame rails for your vertical cut. To do this you need to determine the correct horizontal cuts by

A. Using the lower control arm pivot bolts that are 3-1/2" below spindle centerline on standard Mustang geometry. Measure down (or up) from spindle centerline mark to bottom of your frame rail.

B. Subtract (or add) your dimension from 3-1/2" and difference will be the dimension from control arm inner bolts to horizontal cuts on crossmember.

C. Repeat step B twice- 1-3/4" forward and rearward of spindle centerline, as this is where crossmember will contact frame (See Figure 3). Please note the frame is tapered and sitting on an angle, so front and back cuts are almost never the same. It is important to remember that the crossmember should be level, both side to side and front to back.

D. Transfer dimensions to crossmember. Please note the rack mounts are located on the front of crossmember. It is important to double check all measurements and cut the crossmember. In order to insure a proper fit you need to cut off slightly less than you measured for tight fit. At this point in time the crossmember is centered on spindle centerline.

E. When crossmember is in place, check to make sure it is level, then tack weld in place.

F. Verify the crossmember is as high in the frame as desired. To do this, temporarily assemble the lower control arms and spindles onto crossmember.

G. Temporary clamp a 2x4 under crossmember with a couple of shims to support the control arms level and stand spindles up on ball joints.

H. Verify ride height. If your ride height is not as desired, then remove crossmember and remove or add material as needed, then retack in place. Please check upper control arm mounts and confirm they do not need adjustments for positioning of the crossmember.

4 Upper Control Arm Mount & Spring Towers

Please note the upper control arm mount & spring towers installation are more complicated than the crossmember installation. The spring towers are placed 1½" forward of the front of the crossmember. Use the chart below to determine the horizontal position of the spring towers. To provide better built in caster the Upper Control Arms offer a 1/8" off-set.

Part Number	Track Width	Spring Tower Position
M2U	56.5"	33.5"
M2W	58.5"	35.5"
M2X	60.5"	37.5"

Using tapered boxing plates as gauges, do the following to ensure proper installation.

A. Stand plates on edge on top of the tops of the crossmember, up against the frame boxing plates, with thick end towards front (See Figure 4). This will create a 3 degree taper that is the anti-dive.

B. Hold the spring towers against the outside of the frame so they line up with the boxing plates and transfer the front location of the frame top surface onto spring towers.

C. Hold the spring towers against the outside of the frame so they line up with the boxing plates and transfer the rear location of the frame top surface onto spring towers.

D. Confirm correct installation by holding the spring towers on top of frame and to the specified dimension per track width as found in the above chart. Then make sure that they are aligned. You can do this by confirming the slots for upper control arms are in line with each other from spring tower to spring tower.

E. Mark the spring towers vertically from outsides of the frame rails (See Figure 5). Make sure that the upper spring plates (surface with two slots) are flat to each other from one spring tower to another spring tower across frame. In addition the spring mount cups should be tilted slightly up for antidive.

F. Clamp a piece of bar or tubing onto slotted surface from one spring tower to other to keep them flat for measurement.

G. Start cutting the spring towers to fit. It may take a couple of cuts and some fitting to make a tight fitment. In the event your measurements show, the back of the spring towers need to be cut so it is less than 1", you will need to either raise the entire crossmember and spring towers and reconsider selected ride height, or remove part of top of frame and box it in. Please note the upper control arm rear needs a minimum of 1" height for clearance (See Figure 6). Helix's heavy duty crossmember allows you to do major modification to a frame while increasing strength and ride quality.

H. Tack weld spring towers in place.

I. To ensure correct installation and placement, double-check measurements again.

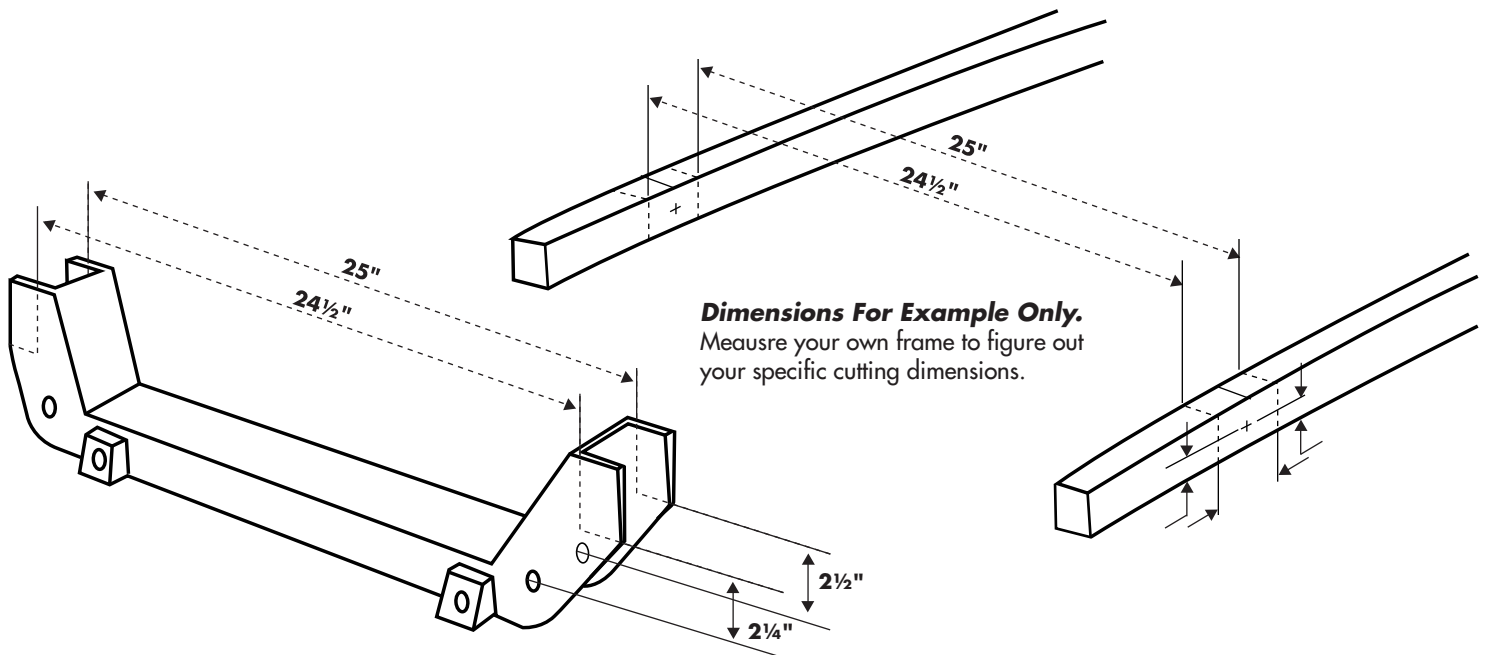
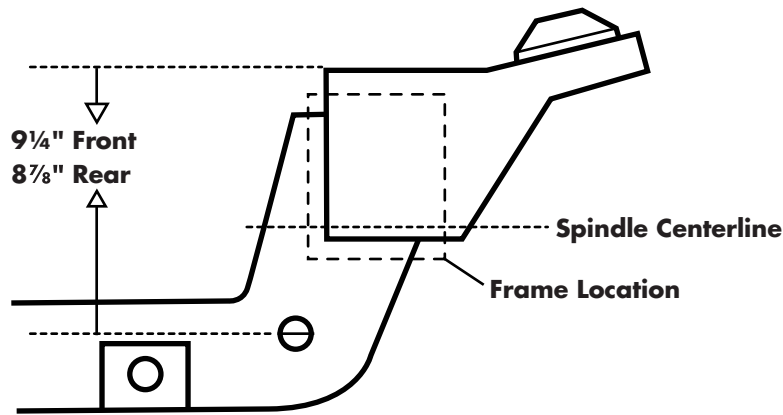
J. Trial assemble the upper control arms onto the spring towers and spindles. When done correctly the suspension in this position is the actual, true ride position when driving the car. The spindles should be straight and square, with approx. 1 degree tilt rearward (caster) when the upper control arms are centered in the mounting slots. In addition check that the spring towers are lined up with the tapered gauge plates when stood on tops of crossmember uprights. To confirm correct installation, the gauge plates should be at the 3 degree anti-dive angle. In the event the the gauge plates do not line up, or the spindles cannot be brought into position, the spring tower location may need adjustment.

K. Test fit the steering rack by installing it to the crossmember. Installation is correct if the steering rack clears the frame by 1/4" or more. In the event you do not have 1/4" clearance you will need to C - notch the frame for the rack. Please make sure you provide enough clearance around all moving parts of the steering rack.

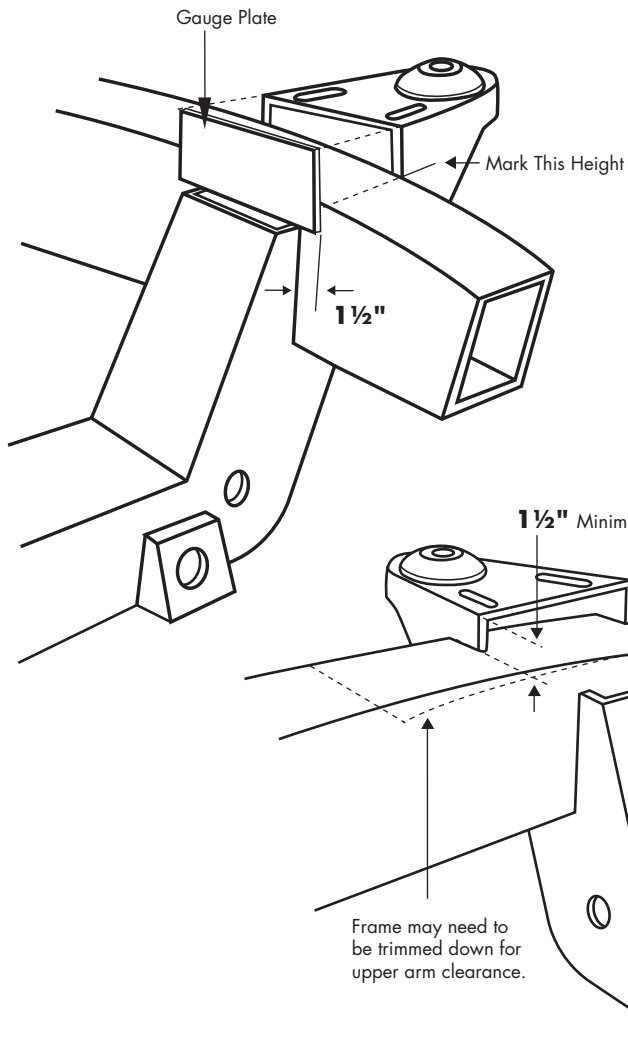
L. At this point of the installation the crossmember should be positioned correctly. Remove all non-crossmember parts and MIG weld the crossmember to the frame. For proper installation trim the gauge plates to box in the open inner ends of the spring towers. In order to improve the look of the final installation cap off and trim the crossmember uprights as desired.

5 Trimming the Crossmember

- A.** Install all the suspension components to the crossmember for the front suspension.
- B.** With your car fully assembled including engine and fuel check to make sure the lower control arm is level. Please note you can not test this until the car is complete and fully assembled with correct curb weight.
- C.** Align your vehicle with the following specifications
- Caster :: 1 degree positive
 - Camber :: 1/2 degree positive
 - Toe-in :: 1/8"
- D.** Recheck your welds, bolt torques, caster, camber, and toe-in after 100 to 200 miles of travel. At this point in time your springs should have settled down, resulting in the lower control arm being parallel to the ground. In the event you car is sitting too high you may need to purchase Helix's softer springs, or cut the springs as needed to achieve desired ride height.



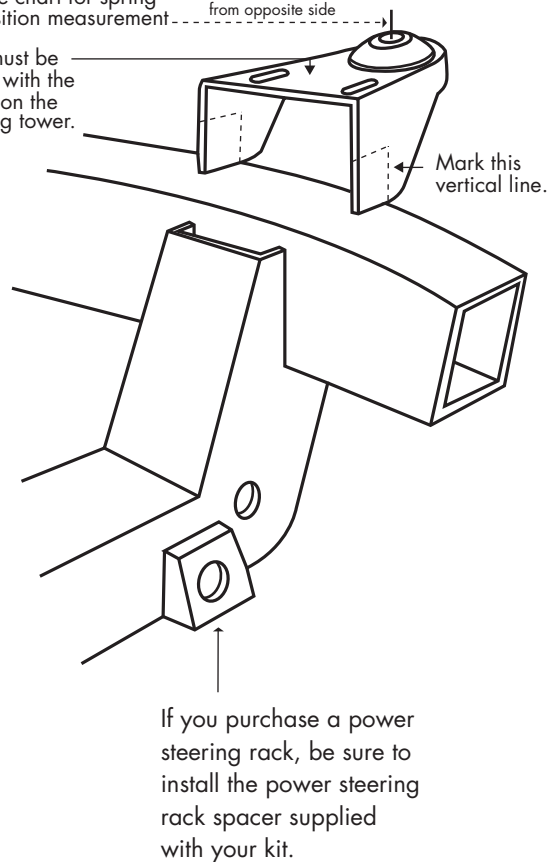
User Guide & Installation Manual Mustang II IFS



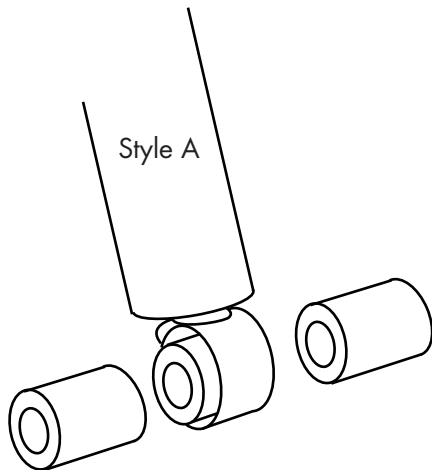
Part Number	Track Width	Spring Tower Position
M2U	56.5"	33.5"
M2W	58.5"	35.5"
M2X	60.5"	37.5"

See above chart for spring tower position measurement from opposite side

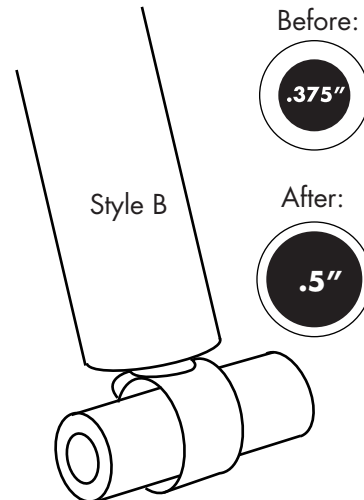
This surface must be parallel/level with the same surface on the opposite spring tower.



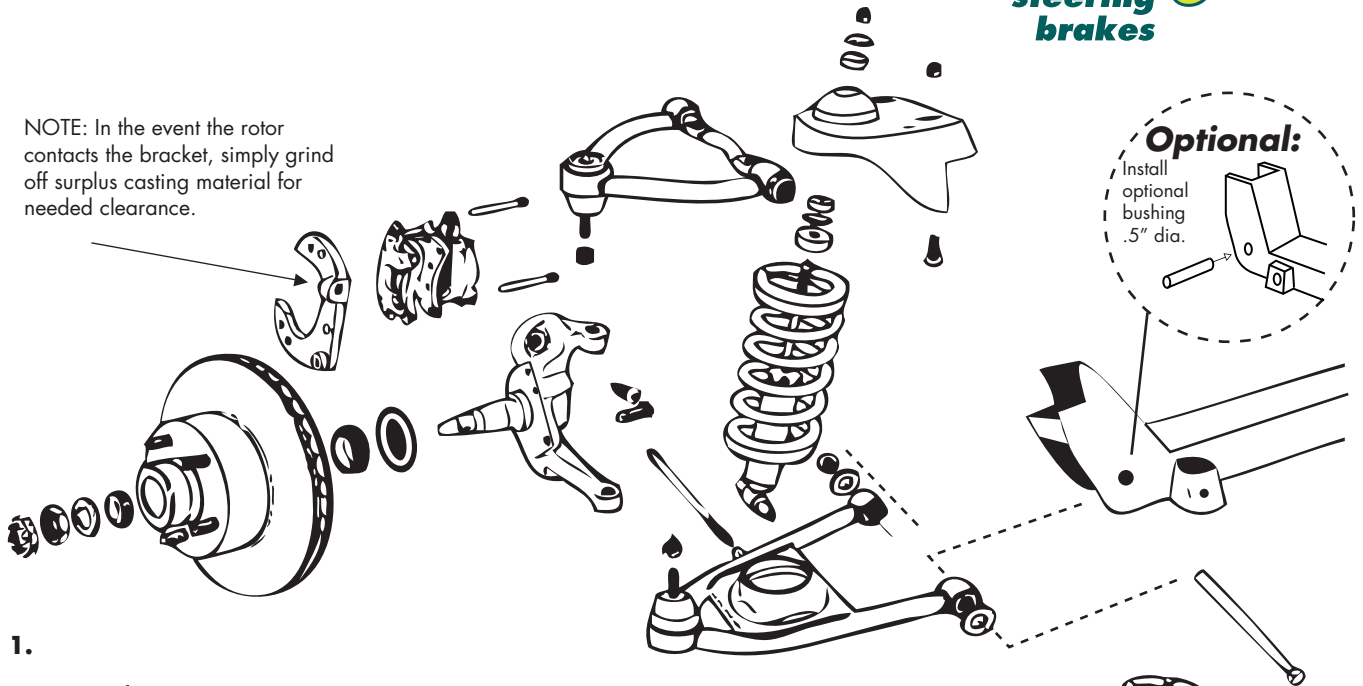
Shock Absorber Notes:



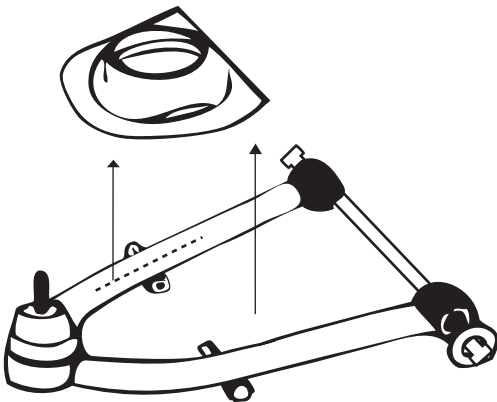
If your kit came with Style A, be sure to use spacers on either side of lower shock mounting hole.
If your kit came with style B, drill out lower mounting hole to accept larger, reinforced lower shock bolt to 1/2".



NOTE: In the event the rotor contacts the bracket, simply grind off surplus casting material for needed clearance.



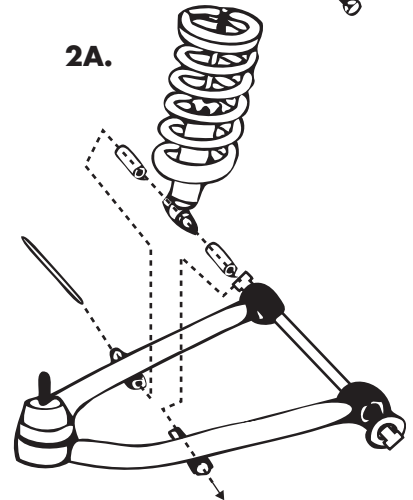
1.



Optional Coilover & AirBag Procedure

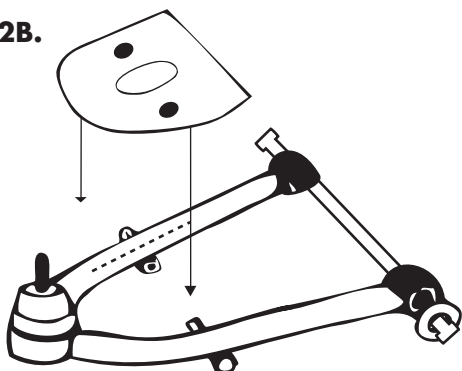
1. Before cutting out the plate, replace the bolt and nut in the arm to retain the shape of the arm. Do not remove the bolt until the new plate has been welded. Cut lower spring landing along welds without damaging tubular control arm and remove. Grind smooth and paint.

2A.



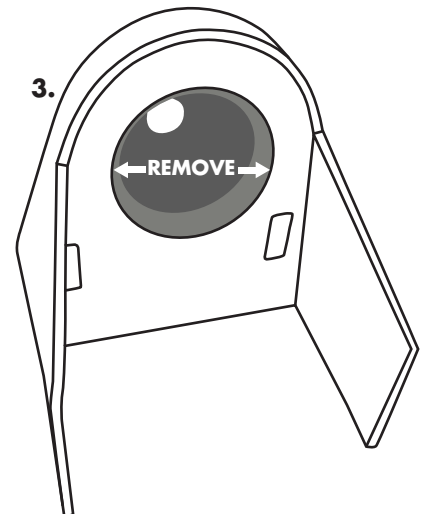
2A. Use the two spacers on either side of the coilover lower mount when mounting into the lower control arm.

2B.



2B. Stitch weld the airbag bracket onto the lower A-arm using 1" welds. Let the arm cool between welds.

3.



3. Install the air bag top hat. For any air bag/air shock kit, the top spring mount on the top hat must be removed.

COIL OVER ASSEMBLY & ADJUSTMENT

INCLUDED:

- HEXSHX1273 x2
- HEXSHXA1 x2
- HEXSHXA2 x2
- HEXSHXB1 x2
- HEXSPR64230350A x1



1

Grab the shock (HEXSHX1273) and the shock adapter (HEXSHXA1). Insert shock adapter over the shock as shown in the picture below. Make sure that the side that has the lip on the inside goes in first.



2

It should look like this.



3

Next attach loop shock adapter (HEXSHXB1) like shown below.



4

After that you will put the bushing eye adapter (HEXSHXA3) on, as shown below.



5

Now you will attach the Spike stem shock adapter (HEXSHXB2) to the end of the shock as shown below.



6

Finally you will put the Spring (HEXSPR3) on the shock. Make sure the smaller end goes down first as shown below.



7

Now repeat for the other side.

NOTE: Use Loctite (or similar thread adhesive) to secure all threaded parts (excluding coil over locking ring).

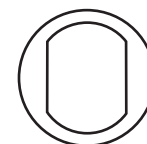
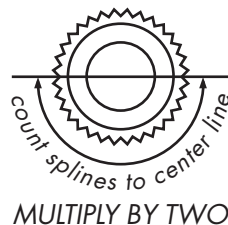


DETERMINING SPLINE SIZE

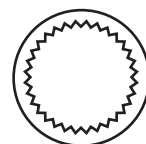
To determine the spline size of a component (rack and pinion, steering column and steering box), measure the outside diameter and count the number of splines. If there is a flat spot on the shaft and some of the spline are missing, count halfway around where there are splines and double that number. We need to know how many teeth are in a theoretical full circle.

Available U-joint combination are:

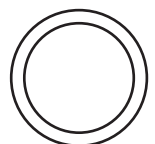
- A) Smooth bore on both ends
- B) Smooth bore and Spline or Double D
- C.) Spine and/or Double D on each end



Double D (DD)



Splined (SP)



Smooth (S)