LOWERING YOUR A-ARMS AREN'T AS DIFFICULT AS YOU THINK! —Jeff Burgy

One of the most effective changes that Carroll Shelby incorporated into the 1965 GT 350 was the relocation of the upper control arm pivot points. This modification accounts for a significant decrease in body roll (about 8%) and a corresponding increase in cornering power. One of the really nice features of this modification is that you don't have to buy any hardware; it's basically as labor-only operation.

Upper control arm pivot relocation can be done to all 1965 through 1970 Shelbys and Mustangs. This relocation was standard on all 1965 GT350s and on all 1966 GT350s up to and including car #252. You can check to see if the pivot points have already been relocated on your car by looking at the upper control arm cross-shaft mounting studs in the engine compartment at the shock towers. If you have a pair of empty holes above your A-arm mounting studs then your pivot points have already been relocated. Lucky you.

The upper control arm relocation was developed by Ford suspension engineer Klaus Arning, who also designed the 427 Cobra and GT40 suspensions. The original purpose of this modification was to compliment the installation of a four-link independent rear suspension (IRS) system that he was experimenting with for the Mustang in 1964. The IRS was axed by Ford's bean-counters who determined that it was not 'cost-effective'. Fortunately, the idea for revising the Mustang's front suspension was passed along to Carroll Shelby. "Shel made good use of it in the early GT350... and Ford's ad men made good use of it in later Shelby literature - claiming that the feature was incorporated into all Shelbys. This led some of the enthusiast magazines to believe it - and to print it. Don't you believe it, though. If you don't have two sets of holes, your upper A-arms aren't lowered!

If you've ever considered performing this modification to your car, I wholeheartedly recommend it. I wouldn't own an early (pre-'71) Mustang that didn't have relocated upper A-arms. It's something that I would do even to my drive-to-work car. The only problem I've ever encountered with this set-up is tire-to-fender clearance. This was never a big problem for me because I managed to stuff GR50x15 T/A Radials on 15x7 Shelby 10-spokes under the front of my '66 GT350 with unflared fenders!

If you're ready to fix your front end the way Carroll Shelby intended it to be, here's what you will need:

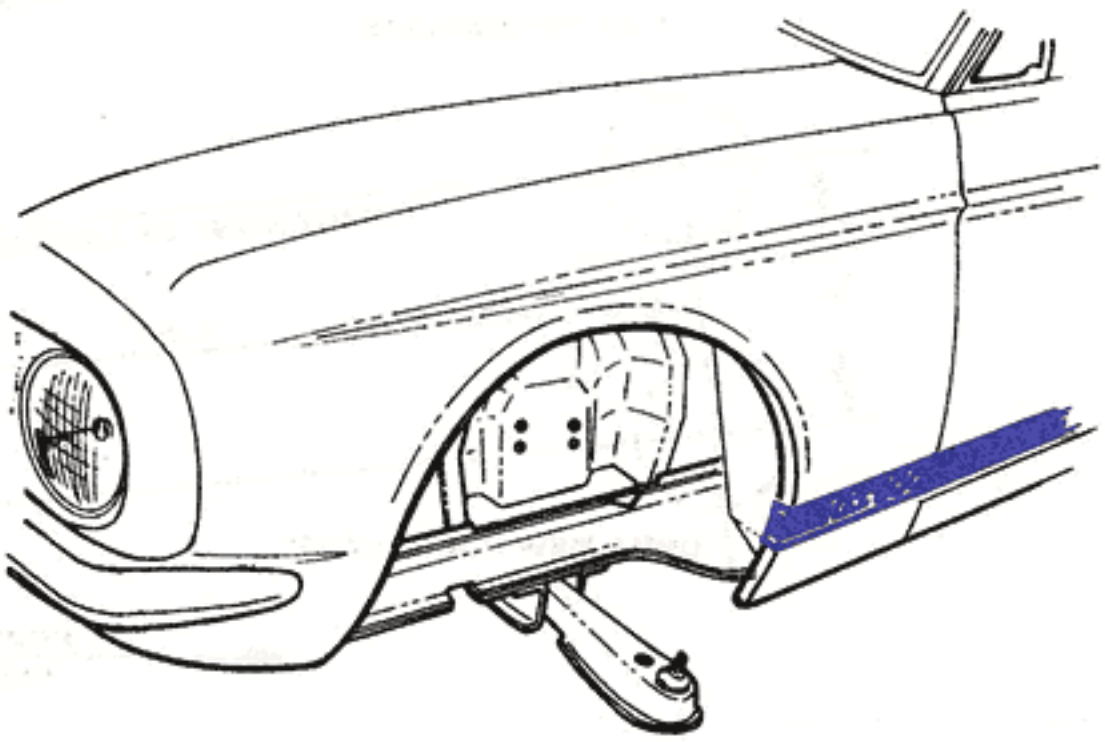
- lowering template (included in this article at no additional cost...)
- jack, jackstands, lug wrench (the car will have to go up and the front wheels will have to come off)
- one-half inch socket (for the shock absorbers)
- spring compressor (rent or borrow one or make your own - see accompanying instructions)
- three-quarter inch wrench (for control arm mounting nuts)
- a half-inch electric drill and a 17/32" bit (plus smaller bits for starting)
- cement blocks, old wheel rims or jackstands (to support the rotor-hub assembly)

This entire operation can be performed in an afternoon or an evening (give yourself about 4-6 hours). Renting a good spring compressor will really help save time.

Here's what to do:

1. Support the front end of your car solidly on a pair of jackstands and then remove the front wheels and shock absorbers.
2. Compress coil spring with rented or fabricated tool. Complete removal of spring will give you more working space, but it is not really necessary as long as you have compressed the spring up and out of your way.
3. Support the brake rotor or lower control arm on blocks, jackstand or old rim.
4. Unbolt the upper control arm from inside the engine compartment. Save the aligning shims (1965-66 only) and place them in a way you'll recall their original position.
5. Swing the upper control arm, rotor and spindle assembly to the side, being careful not to strain the brake line.
6. Take the template accompanying this article (a xerox or tracing if you're jes' folks - tear it out of the magazine if you're a high-roller) and carefully trim out the upper holes. A paper template should suffice to do one car but if you're planning on doing more than one, you'll probably want to have it duplicated in 1/8" steel or aluminum plate.
7. Secure the template in position by bolting it in to your existing holes, using 1/2" bolts and nuts. Be sure you have the template properly oriented; it's drawn for the driver's side, so flip it around to use it on the passenger side.
8. With the template in place, mark the canters for your new holes with a center punch.
9. Drill new holes, starting with a small bit (approx. 1/4") and work up, in three or four steps, to 17/32".
10. Unstall the upper control arm in the new mounting holes, For '65-'66 cars, be sure to place the alignment shims in the reverse order you removed them. Then remove an even thickness (about 1/8"-1/4") of shims from each position (this is a temporary measure to compensate for increased positive camber effected by lowering the pivots).
11. Reassemble the front suspension, following steps 4 through 1 in reverse order.

That's basically all there is to it: dismantle, drill, reassemble. After finishing the job you'll also have to get the front end aligned and before you do, you may experience some excess positive camber which could cause some tire/fender interference. To alleviate this, you may want to remove more shims (from 1965-66 cars) or adjust the camber adjusting cam (at lower control arm inner pivot on 1967-70 cars) to reduce excess positive camber. You could also temporarily use smaller tires or spring boosters for the trip to the alignment shop... but be sure that the tires and wheels you intend to use are on the car when it gets aligned (and if you put spring boosters in, take them out).



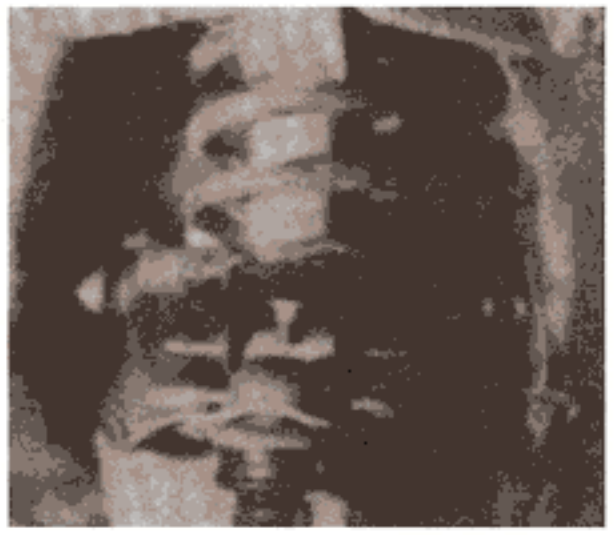
The alignment shop probably won't have specs for Shelbys so they may flip to the Mustang page. Revised alignment specs were printed in the 1965, 1966 and 1967 Shelby owner's manuals and they were different than those given in the Mustang shop manual - because standard Mustangs did not have lowered A-arms.

	CASTER	*CAMBER*	*TOE-IN*
'65 Mustang	-1/4°	+1/2°	9/32"
'66 Mustang	0°	+1/2°	1/8"
'67 Mustang	+1°	+1°	3/16"
'68 Mustang	+1/4°	+1°	3/16"
'69 Mustang	+1/4°	+3/4°	3/16"
'65 Shelby	+2°	0°	1/8"
'66 Shelby	+2°	0°	1/8"
'67 Shelby	+2°	0°	1/8"
'65 R Model	-2½-3°	-1°	1/8"

Confused? You should be. We ran all of these figures by GT350 Project Engineer Chuck Cantwell and asked him what he would recommend. He suggested 2° positive caster (it will make the car slightly harder to steer but will provide more stability), 1° negative camber (or 1/2° negative camber if you're going to run the car hard) and 1/8" toe-in (for all years, '65-'70).

Jeff Burgy, who wrote this article back in early 1980 suggested similar specs (+2° caster; -1° camber; 1/8" toe-in) but added that if you like going around corners, a setting of 1° negative camber would probably work best. *'I had minimal tire wear problems from this setting; the front tires usually wore pretty evenly - on the inside edge from the negative camber and on the outside edge from the hard cornering.'*

Spring saddle at lower end of coil spring.



Template must be bolted to outside of inner fender panel and holes drilled from under fender. You should also consider using new nuts on the upper control arm mounting studs, and removing your headers so you can get a torque wrench on the nuts to properly torque them to 75 ft./lbs. If they happen to loosen up, the holes could elongate - causing you additional problems.

UPPER A-ARM LOWERING TEMPLATE: Actual Size