

Don't Put the Cart Before the Horse.

Time after time, you hear about someone adding this and adding that to their Mustang to get more horsepower, and make their car the fastest among a group of friends. They add a supercharger, nitrous, and other big horsepower adders, without addressing the very foundation all this power has to work with. I guess it's almost like putting a ten-story building on a foundation designed for a single-family home. It may work for a short time, but when stresses build up you have the recipe for disaster and even a life-threatening situation.

The Mustang itself has gone through many variations in chassis design, however one common denominator holds true—it's a basic uni-body design. This design is low cost, lighter, and designed by the manufacturer to be strong enough for the horsepower of the initial design with some added rigidity to give it some type of safety factor above the stresses it will have. If the manufacturer makes it too stiff, costs will increase and weight will increase, which will have a negative impact on initial fuel economy. That added stiffness and weight might have a negative impact on ride quality, depending on suspension designs. So Ford, like the rest, makes the chassis as economical as possible and requires it meet all the needs the engineers and marketing people felt the car should possess, and nothing more.

The chassis design has improved over the past years and today's Mustang chassis can handle much more than that prior model years. But, if your mission for the car is different than its initial design, you have to build up that foundation before you add those ten stories or 300 more horsepower otherwise you are putting the cart before the horse.

The chassis on today's cars are like sponges—they absorb vibration, horsepower and, torque. You hear about the guy with a Mustang who, for some reason, is scratching his head trying to understand why after turning 11 seconds on the quarter mile his door won't close after he gets out of his Mustang. He finds out the car has twisted, and now he has big issues. It took lots of power to twist that body. If

it was set up correctly all that power, or most of it, would have been transmitted to the ground where real go-fast things happen instead of wasting it in twisting the chassis.

When undertaking any project to improve the performance of your Mustang, chassis work should always be first. In road racing, when taking that hard turn, you want each tire to be able to have the maximum traction, with excessive chassis flex to reduce your cornering performance.

With any stiffening you are adding steel and thus adding weight. However, if you need to add weight the best place is down low—your benefits will outweigh your losses.

When looking at the dynamic structure of a Mustang there are three critical areas to be considered:

- the front
- the middle
- the back.

That may sound like a no brainer, but each has its distinct issues and problems.

Let's start with the middle and what's there, or maybe what's not there. All that ties the front and back together are a thin floor, rocker panels, and the roof, except for a convertible. To compensate for the loss of the roof, a convertible has some stiffening added down below. Some times, on Fox bodies, you may want to see what those adders are. They are screwed and riveted items for the most part, many less items than there should be.

So what do we do?

We simply tie the front to the back with a set of frame connectors. Frame connectors are the one simple add on that give you the biggest bang for the buck. I'm always amazed to find out how many high-performance, supercharged Mustangs have nothing added under the car.

Moving to the front of the car, we have a few choices. One suggestion is to simply increase the rigidity of the "K" member, or in early cars the front frame rails/shock towers. Flex of the shock or strut tower has a dramatic affect on the front traction and steering of your car. Tying the front strut/shock towers together and back to the cowl does a world of good. Early Shelby Mustangs had a stiffening plate added behind the shock tower brace where it bolts onto the cowl. The cowl would actually flex under extreme cornering resulting in a large decrease in the benefits of the brace. On cars with K members there is also either a two- or three-point brace added to help the lower section. In most cases, cars with long tube headers can only use a two-point brace.

Now let's discuss the back. Yes, the back needs it too, and in some cars more than others. Just think about the body styles through the years. Fast-backs and coupes have better support than a hatchback. Just open the hatch on a '79-'93 Mustang. What do you find? You virtually have no cross sectional support, and the car is open to much rear flexing, especially at the shock towers. Running a stabilizing bar from shock tower to shock tower helps out immensely. In fact, a roll bar or a roll cage could do even a better job. But if you want to keep a somewhat stock appearance, or have concerns about getting in and out of your Mustang for day-to-day driving, much of the undercarriage items I talked about can make a world of difference and at the same time keep the car fairly stock looking.

Next time it's step two—and NO it's not a supercharger. Step two includes brakes and suspension work!

Have fun and use your Mustang,



JIM SILVERMAN
Chairperson for the Driving Events

Phone: 508.584.8848

