

A Gear To Remember

by Roger Johnson

There are very few modifications you can make to your Mustang (at any price) that will deliver the performance kick a good set of rear end gears will. In fact, for the money involved, *gearing* is the best performance value on the market.

Now days, a deeper set of gears makes more sense than ever in view of the number overdrive transmissions being used on performance cars like Mustangs. This combination of overdrive and good rear-end gearing makes for an ideal package because it delivers plenty of extra 'grunt' around town and relaxed RPMs for highway cruising.

To prove what we preach, we installed a Ford Motorsports 3.55 ring and pinion gear set into a third generation Mustang factory equipped with a 2.73 gear and a 4-speed AOD. We also did a series of before and after zero to 60mph runs and a before and after mileage test. To add even more fuel to the fire, we hooked up a G-Analyst from Valentine Research to record the g-forces during our acceleration runs. Here are the results.

The project car in base form could not spin its tires on a wet road. It also made every one of its zero to sixty runs in first gear only! We shifted into second the moment we touched sixty. The Mustang's very best effort was a lazy 8.04 seconds. The highest g-forces it could pull was a mild .41g's. In stock form, the Mustang would hit its peak g's 2.7 seconds into the run and hold that figure on the G-meter for approximately a half second.

The plus side of this "desert gearing" is the mileage you can enjoy on the highway. This car



knocked down 27 miles per gallon on a controlled 70 mile mileage loop. Our mileage 'test track' included a 60 mile circle of Interstate with a speed of 60mph maintained by cruise control.

Due to the complexity of quality rear-end work, we turned the gear swap over to the pros at one of our local performance oriented Ford dealerships. These guys have factory trained experience, and that makes an installation like this one a snap for them.

Ring and pinion swaps require this kind of experience if you want the job done right the first time, and we know you do. The job took about three hours, but that included a few interruptions from outside sources.

Our first reaction driving the car after the new rear gears were installed was that some one had added an extra 50 cubic inches to the engine. The difference was instantly apparent even using part throttle.

Without delay, we headed back to our test track for some follow-up performance figures.

With no changes besides the gearing, we went back to our launch pad and made five more zero to sixty runs. Just like we knew it would, our test car was clicking off sub-seven second passes with a best of 6.67 seconds! That's a 20 percent improvement in performance from one single modification.

For you AOD drivers, it's an immediate way of gaining parity with your 5-speed counterparts. And for you 5-speed drivers, get ready to go even faster once you learn to control the extra wheel spin.

Our G-meter proved the point even more by registering a much more aggressive .56gs. That's a 27 percent improvement over the stock gearing. It hit that peak number 1.2 seconds into the run.

The 3.55 gearing caused our mileage to drop to 23mpg from its original number of 27. Even though we felt this was a fair

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(continued)

Speed to RPM Equivalency with 2.73 Gearing

Third Gear MPH = RPM	Overdrive 4th Gear MPH = RPM
70 = 2500	70 = 1700
65 = 2250	65 = 1500
60 = 2100	60 = 1400
55 = 1900	55 = 1300
50 = 1750	50 = 1250
45 = 1600	45 = 1200
40 = 1400	*Overdrive
35 = 1200	not used
30 = 1100	below 45mph

Speed to RPM Equivalency with 3.55 Gearing

Third Gear MPH = RPM	Overdrive 4th Gear MPH = RPM
70 = 3250	70 = 2100
65 = 3000	65 = 1950
60 = 2750	60 = 1800
55 = 2600	55 = 1700
50 = 2250	50 = 1500
45 = 2000	45 = 1350
40 = 1800	*Overdrive
35 = 1600	not used
30 = 1300	below 45mph

trade considering how much harder our car wants to run.

With our 3.55 gears, the Mustang will definitely light up its tires even on very *dry* roads. In fact, for the first time wheel spin is almost a problem if you're not careful. For maximum performance, we've had to train ourselves to launch at about 2/3 throttle, then nail it once rolling. This method still allows for plenty of 'snap' off the line but puts all your power on the road.

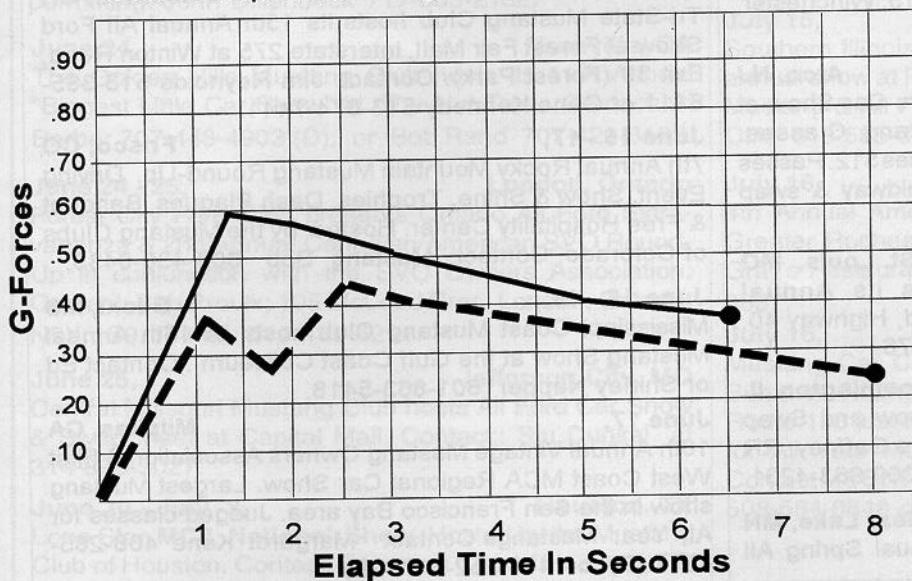
You will find that your engine is now almost always in its power band. Throttle response is *Right This Second*, and at long last you can finally hear that sweet 302 engine sound.

This particular test car has since improved its highway mileage despite the addition of other performance modifications like a bigger throttle body and mass air meter. Now, 26mpg is common even at 75mph cruising speeds!

If you're looking for a proven method for increased performance, the 3.55 is definitely a gear to remember.

G-Forces Generated During Acceleration

Solid line represents 3.55 gear - Broken line represents 2.73 gear



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