

# HP VARIABLES

## '99-'01 COBRA / MACH 1

In '04, Kenne Bell introduced our '99-'01 Cobra kits. They were a resounding success. No one complained about how the kit performed on the street. In fact, we received nothing but praise for the incredible performance increase the kit made. However, a few customers complained about their dyno HP not matching our advertised power numbers, so we tested another customer's car (#2). The customers were right. The #2 car dynoed at 28HP less than our #1 original test car, but the data logger revealed something unusual about the #2 test car - it was making 2 psi LESS BOOST WITH THE SAME 3-1/4" PULLEY - or about 14 HP per psi of boost. Once we installed the smaller 3" pulley (+2 psi boost and 28HP), the power numbers were comparable and matched our advertised HP numbers.

After talking to some Ford engineers and running more tests, we've concluded that there is no doubt that the cam timing varies. Richard Holdener, Tech Editor for Muscle Mustangs & Fast Fords also documented this in his Cobra cam tests - a 7° and 3° variation. So have others. This obviously affects both HP and supercharger boost, just as it did in 1996 when we introduced our '96-'98 kits. At that time, we experienced a 1-1.5 psi variation on our 6 psi kits. All kits were sent with a bulletin explaining the problem. If a customer's boost was low, we would send the necessary pulley with an installation wrench no charge. Eight years later and we still have the issue with our '99-'01 kit.

To prove the point, we ran our '05 supercharged 3V Mustang with a wide range of cam advance and retard positions. This is a relatively easy test as we can advance and retard the cams electronically with a "chip" in the '05's. Sure enough, both the HP and the low boost varied - just as it did with the '96-'01 Cobras. Sorry, but we have no idea how much the 4V cams affect HP and boost. We haven't done any actual test comparisons, so we'll refrain from commenting.

In addition to the factory cam location variables, we were told the power - and boost - can be further reduced because of valve sealing issues. Add to this dyno variables (see [Dyno Testing Variables <http://www.kennebell.net/techinfo/general-info/DynoTestVariables.pdf>](http://www.kennebell.net/techinfo/general-info/DynoTestVariables.pdf)) and the margin of error can be greater. Apparently, the 4V head has experienced some minor valve sealing problems. One Ford engineer said: "Put 87 in the car. If it pings, it's a good one. If it doesn't ping, there's some valve leakage, but it won't hurt a thing - except a little HP loss." As the old saying goes: "That's our story and we're stickin' to it." We do not care to discuss this issue any further. We cannot control factory tolerances - so we can't guarantee exact boost numbers - and we can't blame Ford. They never asked us to supercharge their Cobras, so it's not a problem we can - or should - blame them for. It's just the way it is. Ford produced a great engine and car.

The dyno tests we've published are the maximum HP gains that you might expect. Kenne Bell designed a great supercharger kit that makes the car an incredible performer. No one can deny that. Again, no one ever complained about how the kit performed, so if your dyno numbers and/or boost don't match ours, check the boost and we'll send you an "adjusted" pulley and installation tool no charge. And remember, it's the difference in the way your car feels that is important. You don't drive the dyno.