Searching for the Ultimate Stock Lower Intake?

By: Tom Moss

When Ford released the EFI HO motor in 1986 they had created a small displacement engine that made far more torque and low-mid range rpm than any previous carburetor intake could. One very big contributor to that torque was the long runner EFI intake. As good as it was Ford must have known it could be better because the next year Ford redesigned the upper intake and added some cross section to the runners. Unfortunately, they did not change the lower intake runners.

Six years ago when I was given my 88 GT Speed Density completely stock convertible Mustang GT by a wonderful Aunt, it was my first EFI Ford and being a life-long rodder, I started looking over what might be improved in the stock parts. I checked with Ford for campaigns on the car and found I could get a new ignition switch and a new stock H pipe because my car had never had the recall campaigns done to them, so I got the new parts installed and had a new 2.5" Flowmaster catback put on the car at the same time.

As a teenager in the 1960s, cutting my teeth on modifying cars, the high-performance aftermarket was not nearly as developed as it is today and the internet did not exist as a resource to share experience and knowledge – you had to go to your local speed shop for advice and/or experiment and do modifications to stock parts yourself. My research on the Fox Mustang on the net led me to some older postings by Pete Turek who experimented with these Fox EFI cars and engines. Pete shared a great deal of his knowledge and experience with his research and results and I was able to learn the restriction in the intake was in the lower before I had even pulled the anything off the completely stock engine in my car.

So, with the knowledge that the lower intake was a good place to start, I bought a used lower intake to port for my car. I have had a VC-200 performance computer since about 1987 and I did a baseline test on the car and came up with 200HP, 270lb-ft and 15.05 @ 89 mph quarter mile. I then started to port the spare lower intake I had purchased on Ebay. An ideal flow path from intake to head has minimal to no bends in the runner. Each bend adds restriction and causes momentum of the air charge to be lost. If you take a look at a stock lower intake, you will see all but one of the runners have some amount of bend in them and there are also some significant restrictions in the runners where they transition to the head flange. I ported the intake to both increase the "effective" cross section of the runners and to reshape the runner walls to allow for better airflow around the corner restrictions. After installing the intake I took my VC-200 back out on a back road and ran my test again with a 223HP, 295lb-ft and 14.9 @ 92 mph. The initial gain was more than I had hoped for, so I took the car to be dyno tested just to see what those numbers looked like. The Dyno-Jet results were 219RWHP and 290lb-ft, so I knew the results were solid and there was more than the initial .15 sec and 3 mph had indicated. Since that time, customers with stock combos have seen as much as 5mph and .4 second gains in the quarter mile.

Having become a member of most of the major 5.0 Mustang Internet Boards, I started to report my results and was met with some skepticism. It was common "knowledge" that the stock intake was not worth modifying, but I felt differently based on my own personal results. So began my slow venture into porting stock lower intakes for people who wanted to try out an improved stock intake. Time has proven the stock intake to be a very capable intake with practically unbeatable average torque/power under about 4,000 rpm on a 302ci to 306ci engine and fully capable of making 260-290 RWHP and over 310RWTQ while putting ported stock part cars well into the 12s.

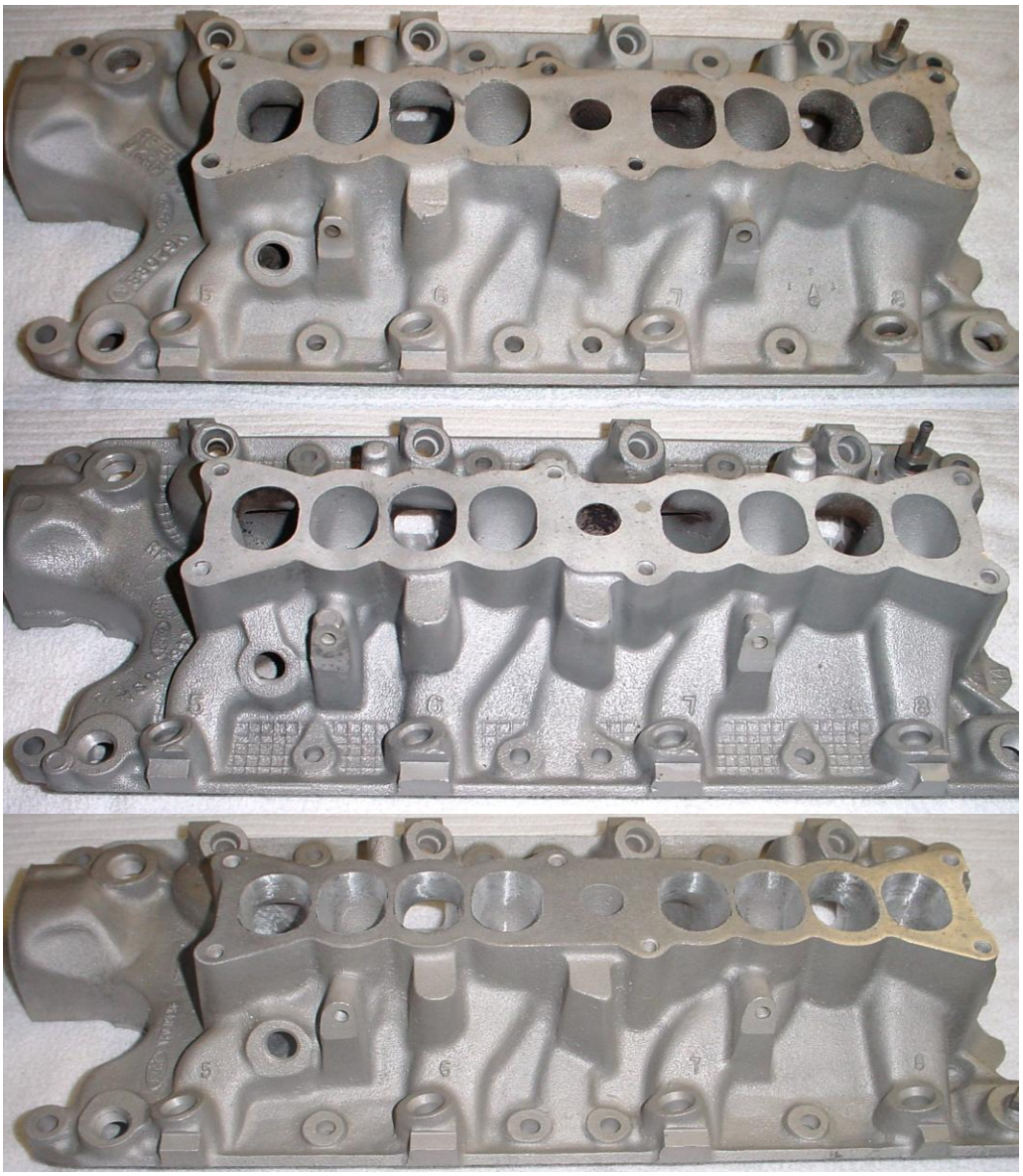
As a result of request to supply ported lower intakes, I have seen literally hundreds of stock 5.0 EFI lower intakes. As a result, I have come to know the major suppliers to Ford. The way to identify the vast majority of lower intakes is to look at the rear driver's side flange and find the cast in name of the supplier. You will find names such as SAC, SAC 1, SAC 2, SAC 3, SAC 4, ALCAN, and CAE. See photos of where to find the markings.

The major difference in the above mentioned suppliers is the method of casting. The SAC casting are sand mold castings which have a rough sand finish and use only one mold per intake. The CAE and ALCAN lower intakes are investment cast which re-uses the mold and results in a smoother finish on the intake. The ALCAN also has a distinctive wire mesh pattern in the top flange valleys (see photo).

There is another supplier of lower intake to Ford and I still do not know what cars Ford put these intakes on from the factory. The casting mark is not on the back driver's side flange like all the others. If you turn these intakes over and look at the bottom of the cooling water crossover passage, you will find an "M3" or "M2" cast into the bottom of the passage. See the picture.

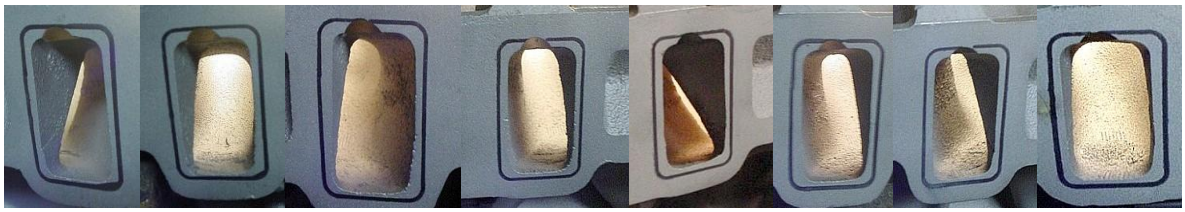
The significance of these various intakes is in their potential for porting. The #1, #5, #2, #3, #6 and #7 runners tend to get thin on the short side (back of the "knee" of the curve) and if you're not careful, you can break through the casting on the top exposed surface of the runner while porting. So, the more material that is cast into the exposed top of the runner, the less chance you have of breaking through the casting. Of course you can TIG weld a puddle of aluminum in the area to avoid breaking through, but you loose the 100% stock look of the intake. Granted it is not easy to see the welds if you don't get carried away but it is detectable upon inspection.

If you want the best lower intake to port for a stock intake application, you need to find one of the M3 / M2 castings. Their runner cross section at the head flange is smaller and more restricted than the other 5.0 lower intakes, but they have much more meat in the casting for porting. This is easily seen when you look at a runner such as the #5 runner where it meets the head flange. See the picture of a SAC, ALCAN and M3 intake casting.



The SAC intakes have the least amount of material, the ALCAN and CAE have more, and the M2 & M3 intakes have the most. They have enough material to produce a 1250 size cross section at the head flange without having to weld the top of the runner. It holds potential to produce the best flow un-welded.

Here are some photos to the marked M3 intake runners before and then after porting.



#1 #2 #3 #4 #5 #6 #7 #8

#1 #2 #3 #4 #5 #6 #7 #8