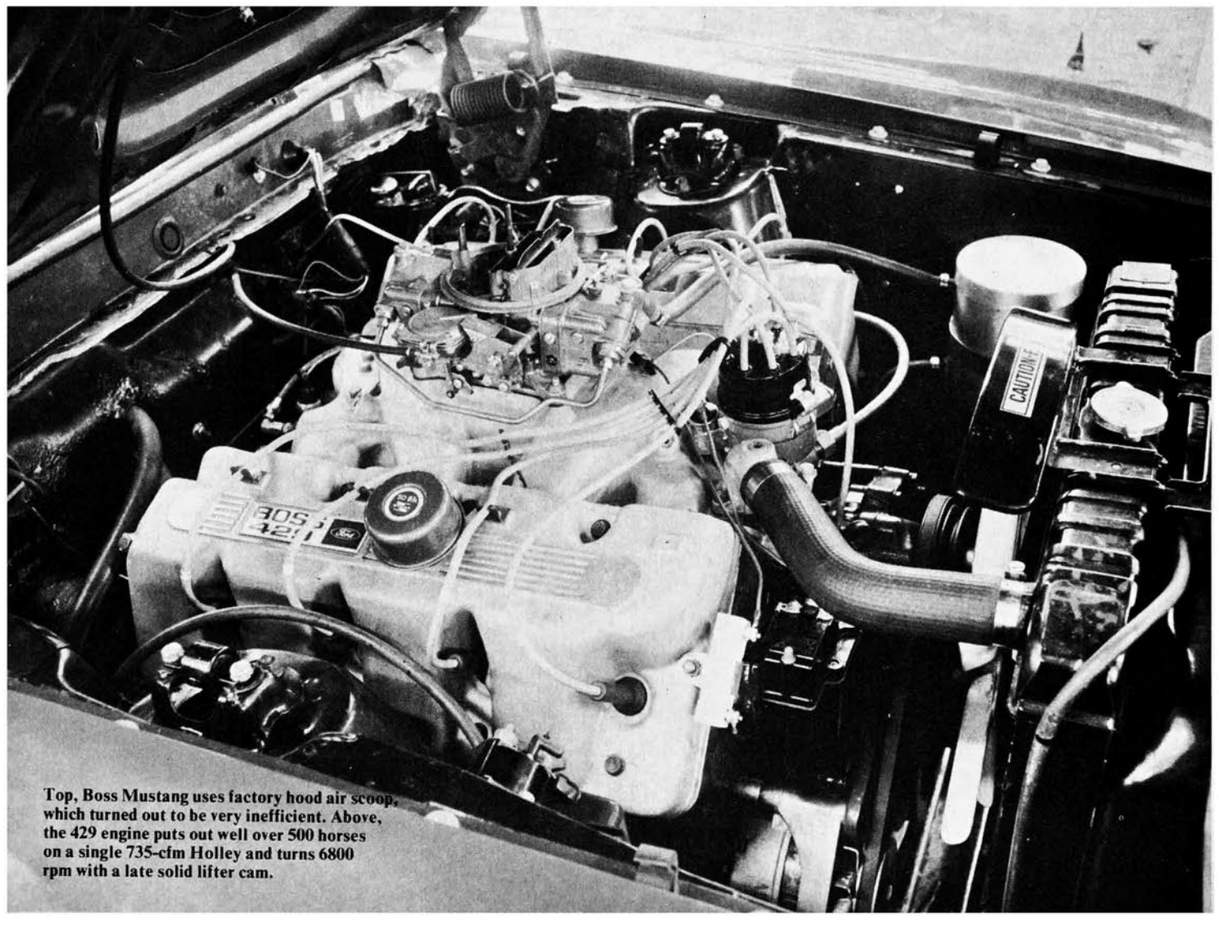


Top, Boss Mustang uses factory hood air scoop, which turned out to be very inefficient. Above, the 429 engine puts out well over 500 horses on a single 735-cfm Holley and turns 6800 rpm with a late solid lifter cam.

FORD'S NEW BLUE CRESCENT 429: IS IT THE ULTIMATE

STONE PONY OR STRIP STALLION?

BY ROGER HUNTINGTON

FORD'S NEW BOSS 429 Mustang has been a real puzzler to young American car fans. It was launched a few months ago with wild performance claims and a pre-judged reputation as the strongest factory-built street machine in the world. Everybody expected fabulous things.

But those on the inside knew that Ford's main reason for building these cars was to make the 429 "Blue Crescent" engine eligible for NASCAR Grand National stock car racing. The rules say you have to make at least 500 cars for public sale with the engine in question. This is why Ford rushed the Boss 429 Mustang into production. In fact, they built approximately 700 units in the '69 model run. But they were handbuilt cars—cobble jobs, standard Mustangs chopped and welded to fit the big 429 engine in outside shops. The engines were hastily assembled from pieces supplied by dozens of vendors from coast to coast. It was a million-dollar crash production program that was necessary just to make the 429 engine legal on NASCAR tracks!

Should we, then, expect much from this car under these conditions? Remember that Ford never begged anybody to buy them. The original run of 500 cars was snapped up within days after announcement, mostly by Ford dealers planning to run them on drag strips and a few well-heeled buyers wanted super-hot street machines. So far we have seen very, very few of these Boss 429 Mustangs either on the streets or the strips. And the car fans are starting to ask questions. Where are they? Do they run? Are they competitive in their various drag racing classes, either Stock or Super Stock? Are they any good on the street?

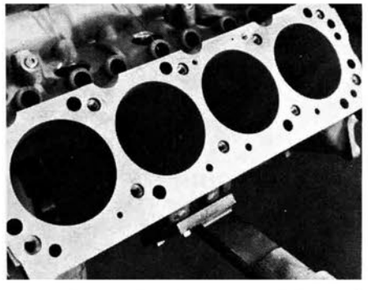
We decided to check out a typical Boss 429 project and get the straight scoop. The Tom Larkin Ford dealership in Flat Rock, Mich. (south of Detroit) has been sponsoring a well-set-up drag strip version for several weeks now. The driver is Tony Balowski and mechanics are Arlen Fadely and LeRoy Hinzmann of Ford. Fadely is a reportwriter in the engineering department and Hinzmann is a tool-maker. Both are expert mechanics with several years of experience in setting up drag machinery in the Detroit area. And their direct connection with the Ford company has given them perhaps a little more efficient "pipeline" for hard-to-get parts than some joker out in Seattle. So we'll have to note that this project is well sponsored, well driven and well tuned. If the car falls on its face it won't be entirely the fault of the people involved. This is a strong, serious project.

So what did they have to work with?

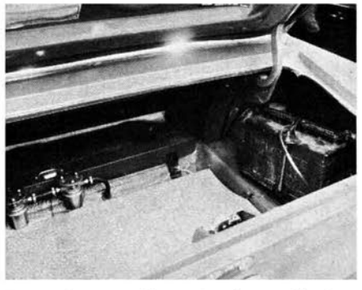
By now I'm sure most of our readers are quite familiar with the general specs of the 429 Blue Crescent engine and the Mustang that it comes in, as both have been well covered on these pages a few months ago. We won't go into detail now. But keep in mind that the *street* version of the engine (not the all-out NASCAR version) is what you get in the Boss Mustang. This has 2.29-inch intake valve diameter (instead of 2.40), a conventional two-plane 180-degree intake manifold with 735-cfm Holley carb, 10.5-to-1 compression ratio pistons and a fairly mild hydraulic cam with nominal 285-degree duration and .490-inch lift. Ford rates this combination 370 hp at 4800 rpm. This sounds pretty conservative. But note that they rate the 370 hp well below the peak of the power curve at 4800 rpm. An engine like this would normally be rated over 400 hp at 5500-6000 rpm. We'll see if the 370 hp really *is* conservative later!

The Boss Mustang chassis doesn't take a whole lot of work to get it ready for the drag strip, as it's quite a complete package as you get it. It's got stuff like a strong nodular iron flywheel and heavy-duty solid-disk clutch (nearly 3000 pounds of spring pressure), heavy-duty springs and shocks, heavy-duty Ford close-ratio four-speed with Hurst shifter, beefed rear axle with Ford's new limited-slip differential (which seems to be nearly as strong as the old "Detroit Automotive locker"). Axle gears are 4.71.

Major changes on the chassis for the drag strip: Cure-Ride 90/10 up-lock shocks in front along with softer

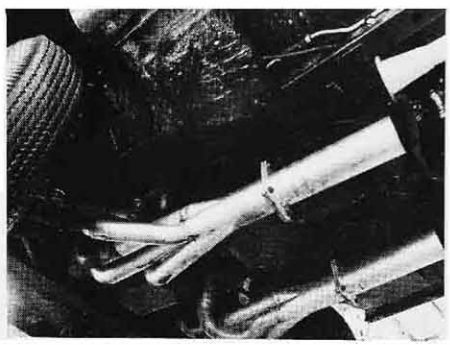


Factory 429 "NASCAR" block uses "dry deck" to eliminate head gasket problems.

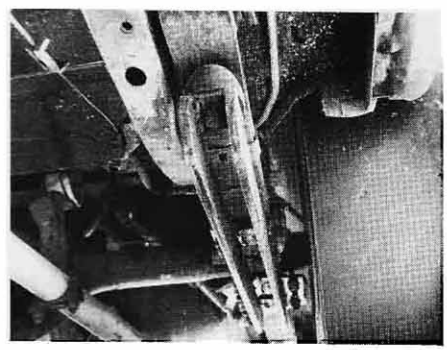


Battery is mounted in trunk at factory. Engine weighs 620 pounds—for good traction.

Tom Larkin's Boss Mustang runs low 12's and 118 mph in B/stock—near the national record.



Junior's headers bolted on without any chopping or bending. And they seem to do a good job.



Special rear traction bars were designed by funny car driver Kelly Chadwick.

coil springs from the Boss 302 Mustang to allow the front end to rise six inches coming off the line. Synchronizer teeth in the transmission were shaved off to make a "crash" box and give quicker, more positive speed-shifts. The clutch lever arm had to be beefed up to prevent bending on high-speed shifts. The leaf spring pads on the rear axle had to be beefed to prevent bending, with larger U-bolts to hold the spring. Rear traction bars are a new design by famous funny car man Kelly Chadwick. They bolt solid under the rear spring pad and run forward flush along the bottom leaf. Reaction is against a small rubber pad on the front of the arm, just behind the spring eye. The boys also put a rubber snubber on the top of the rear axle center section to make contact with the underbody when the axle twists up under torque coming off the line. Between the traction arms and the pinion snubber there is excellent axle wind-up control. In fact, everybody agrees that traction on the new car leaves little to be desired. The driver can bomb off the line by dumping the clutch at 6000 rpm, with very little tirespin—even with 7-inch treads for the stock classes! That's fabulous traction for an engine this size.

The chassis has really been no problem. It works fine.

The engine is something else. For one thing it took a very extensive blueprint job to bring the specs within factory figures as filed with NHRA and to get chamber volumes right, crankshaft balance right, etc. The engine was pretty sloppy the way it came in the car. This is probably an inevitable result of the crash development program and the fact that the engine is assembled mostly from vendor pieces. I'm sure many of these problems will be taken care of on the 1970 engines, when production settles down and there's more time for inspection and quality control. But anybody planning to build up one of the early engines should plan a very thorough blueprint job. And don't expect too much of the engine without it!

Another problem was the camshaft. The original 285-degree hydraulic job just didn't have it. Or at least the cam timing wasn't properly tuned to the rest of the engine—port and valve size, carburetion, exhaust system, etc. The car ran in the low 14's at only a little over 100 mph in showroom trim with the original hydro cam. Then on June 1st, Ford released an improved solid-lifter cam for the Boss 429 engine, featuring a duration of 300 degree, 72 degree overlap and a wild lift of .525 inch. This is part No. C9AE-6250-B (to be used with lifters DOAE-6500-B), and this system has been factory-installed on all Boss 429's going out since June 1st. It's a much better cam. The engine feels and sounds a lot stronger and the solid lifters have extended the usable rev range from about 5800 to 6800 rpm. (This is using the original valve springs that give 350 pounds of pressure with valve open.)

NHRA has bought the new cam as a "stock" part, too. But they pulled a little switch. Using the original hydraulic cam they accept the factory hp rating of 370, which puts the car in the C/Stock class with the factory shipping weight of 3269 pounds. But when you use the new solid cam they "factor" the hp up to *435* and it puts you in B/Stock. This is probably fair, as other engines with specs like this are sometimes factored to 450 hp or more. The Mopar Street Hemi is factored at *525 hp*! But this placing in B/Stock with the solid cam may be a tough nut to crack for the untried Boss 429 Mustang. The NHRA strip record here, as this is written, is 11.85 et at 119 mph—held by a '67 Fairlane with 427 engine. That's the bogey that the boys had to shoot at.

It may not sound like a tough nut. But keep in mind that they are handicapped by a mild 10.5-to-1 compression ratio, a none-too-wild 300-degree cam timing duration and a single 735-cfm Holley carb. Most of the competition has much more carburetion and compression.

An unexpected handicap turned out to be the hood air scoop on the Boss Mustang. They use a special fiberglass hood with a rather low, wide scoop set about half way back, feeding directly down into a sheet metal bowl over the carburetor, sealed against the underside of the hood by a thick rubber foam gasket. (There is no vacuum flap valve to shut off the cold air when cruising, as on the Cobra Jets.) The design looks good on paper. But apparently there's an odd air flow or "boundary layer" effect at higher car speeds that partially chokes off the flow going into the scoop.

It's hard to believe how this effected the performance of the car on the strip. With the new solid-lifter cam and stock air scoop (with sealing around the carb), the best they could turn were et's in the high 12's at 107 mph. By just taking the sheet metal

(Continued on Page 72)

bowl and foam gasket off (so the engine could draw underhood air freely) the times improved immediately to *low 12's at 117 mph*! No other changes.

This represents a difference in engine output of between 100 and 150 horses at the top end! The engine was literally starved for air at high speeds when pulling entirely through the scoop. (Furthermore I think this happens to a lesser degree on several factory hood scoops on late models. Detroit engineers have never really gotten down to business and designed these scoops from a truly scientific standpoint in a wind tunnel. They've designed them more from a styling standpoint—and some of the best-looking do a lousy job of getting air to the engine, especially at high car speeds. Detroit had better look into this problem seriously if we're going to continue on this "ram air" kick.)

But back to the Mustang. The boys apparently got another 100 to 150 hp by just removing the air box bowl around the carb and breathing underhood air. But this still wasn't too good a deal because they were now getting a lot of *warm* air to the carb—and there wasn't any ram pressure at all. It was almost as if there was no hood scoop at all at this point. And the car felt it. The driver said it didn't feel as strong on high gear as it should. This was a big handicap because many of the competing cars in B/Stock had efficient factory scoops. But the boys' hands are tied here because NHRA rules forbid any substantial alterations on the hood scoop itself. They'd like nothing better than to butcher up the stock scoop and fabricate a good one out of aluminum or fiberglass. Designs like the new 440 Road Runner, Hurst/Olds and Hurst SC/Rambler are good to copy—where the bottom of the scoop opening is raised an inch or so above the hood line. This is the right way to go on hood scoops. But it's no go, under NHRA Stock class rules. They can only remove the air box bowl beneath the hood, which is no better than no scoop at all.

So here's a problem that nobody was looking for on the Boss 429 Mustang. The only answer is for Ford to get busy and design a better scoop for the 1970 models. Fadely and Hinzmann are trying to do the best they can with what they have to work with.

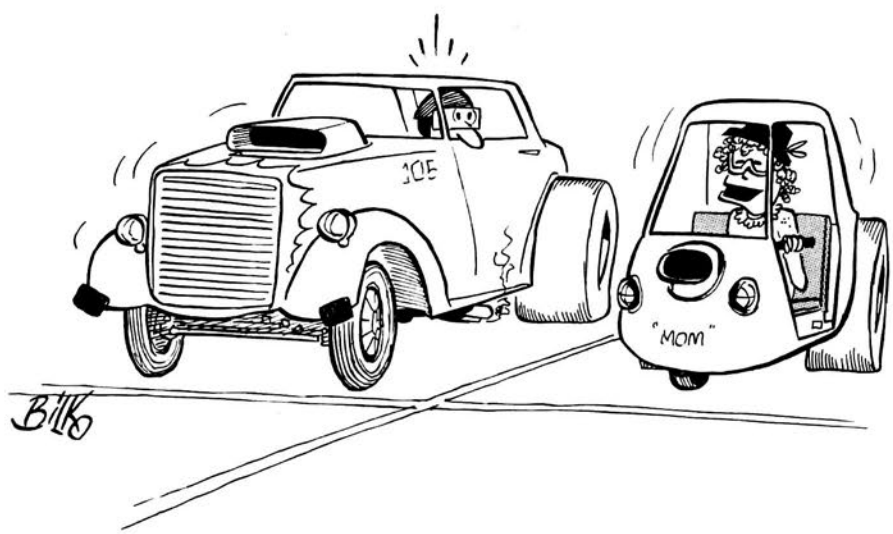
As this is written, Balowski has a best time with the car of 12.09 et at 118.21 mph at Detroit Dragway. This is with 4.71 rear end gears and M&H 9.00x15 grooved Super Stock tires with 7-inch tread width. Shifts are made at 6200 rpm and the car crosses the finish line at around 6300 in high. These times are within shooting distance of the nhra B/Stock records. It would only take another 20 or 30 horses to do the job. Nobody is discouraged.

And the boys have plans for some further experiments. One, they're going to try a set of the new Firestone 9.00x15, 7-inch stock class tires when they can find them. They're scarce right now. But the word is that they're the stickiest yet in the 7-inch tread width. Some cars have gone as quick on 7-inch Firestones as on 9-inch Goodyear slicks! These tires wouldn't do anything for the trap speed; but they could drop the et a couple of tenths.

There could be some more meat in gearing. This engine should pull all right to at least 6800 rpm, even with the single 735-cfm carb. A switch to 4.86 rear end gears is being considered. The boys have hesitated because the engine hasn't felt that strong in high gear. But sometimes a gear change helps et even if it hurts the trap speed. We would suggest trying 4.57's *and* 4.86's.

There must be a few more horses lurking in the engine, even with that poor air scoop. The boys plan to experiment with different carb jetting, both richer and leaner, and they want to see what happens when total spark advance is in the neighborhood of 40 degrees. They haven't tried beyond 36 et (with initial around 16 degr. and all the advance in at 2400 rpm engine speed). Ignition is Mallory Rev-Pol. And there may be a few more horses in exhaust headers. Right now they're using a set of Junior's headers designed especially for this car. (Incidentally they bolted right on in 15 minutes, without having to do any chopping or bending!) Junior made most of Ford's experimental headers for dyno-testing the 429 engine, so he had a head start in supplying the hot rod market. But one always wonders whether some other tube size or length or collector design might pull a few more horses. These are things you have to try when you're after that last ounce of speed on the drag strip. And this is what costs so much money and takes so much time. It's why the big-name pros who work at it full time have such an advantage over the little weekend warrior.

So that's the story, gang. We've tried to give you a little inside look at what it means to take a completely new and untried engine and make it competitive with the nation's best on the NHRA drag strips. It's not as easy as it looks, even when you have a fair amount of money to work with and a basic engine design that has most of



"You're sweet to help an old lady across the strip."

the accepted goodies. We had both in this project. But it takes time to find the magic combination. Usually a lot more than a year. It would be a miracle if our heros, or any other Boss 429 team for that matter, could take a class win at any of the big NHRA National meets this year.

But maybe in 1970 . . .

BOSS GASSER continued

soon as the nose begins to lift, and avoids sudden changes in loading. For instance, if the front end rears up hard enough, it can then jerk the rear wheels off the ground as well, while limiting the rise gains top traction.

Right now the Boss Mustang is around 70 pounds over its 2000-pound limit, but since 780 pounds of the weight is taken up by the engine and flywheel alone, there isn't too much more lightening that can be done. One step in the right direction was to use a lightweight 125-pound Shedlik body out of Shedlik Engineering in Inkster, Michigan. Also, Tom Smith of Wolverine Diesel contributed some very light aluminum work with cleverly formed cut-outs that are flanged over to retain the stiffness while doing away with extra metal. A thirty-pound battery, complete with supporting brackets will be eliminated from the rear of the car as soon as Wayne converts to an outside 24-volt battery for starting purposes. Neither partner is very happy with that because when you travel alone to a strip, that outside battery can be a nuisance. Wayne and Jim are even less happy with the prospect of chucking the cooling system, especially since a gasser usually runs hotter than the fuelers they have had in the past.

Of course, we left the best for last, an unreal paint job by Paul Shedlik, complete with a wild Cobra baring his fangs from the tail end of Gapp's machine. In a tight race, when the competition is in hot pursuit, that Cobra has been known to hiss, breathe fire, turn on the steam and flat streak through the lights.

MINI T continued

with turtledecks and really comes in handy for short or long hauls. Cost of this beauty is $40.75.

Since the engine in most dune buggys is either partially or completely exposed, chrome and alumi-

(Continued on Page 75)