

FORD'S BETTER IDEAS FOR PERFORMANCE

FORD'S RACING PROGRAM HAS PAID OFF IN A BIG WAY. NOT ONLY ARE THEY WINNING MORE THAN THEIR SHARE OF RACES, BUT THEY'RE ALSO OFFERING A VERY COMPETITIVE STREET PERFORMANCE PACKAGE.

By Roger Huntington

Every automotive magazine soon learns that most of its readers are definitely prejudiced toward one make of car — or at least one of the Big Three corporations. There are Chevy and GM lovers. And Ford lovers. And MoPar lovers. We have found that the great majority of car fans — especially the younger ones — are like this. Their minds aren't completely closed to what's going on (and what's hot) in the other companies; but they can always seem to come up with an argument as to why their favorite company is doing a better job.

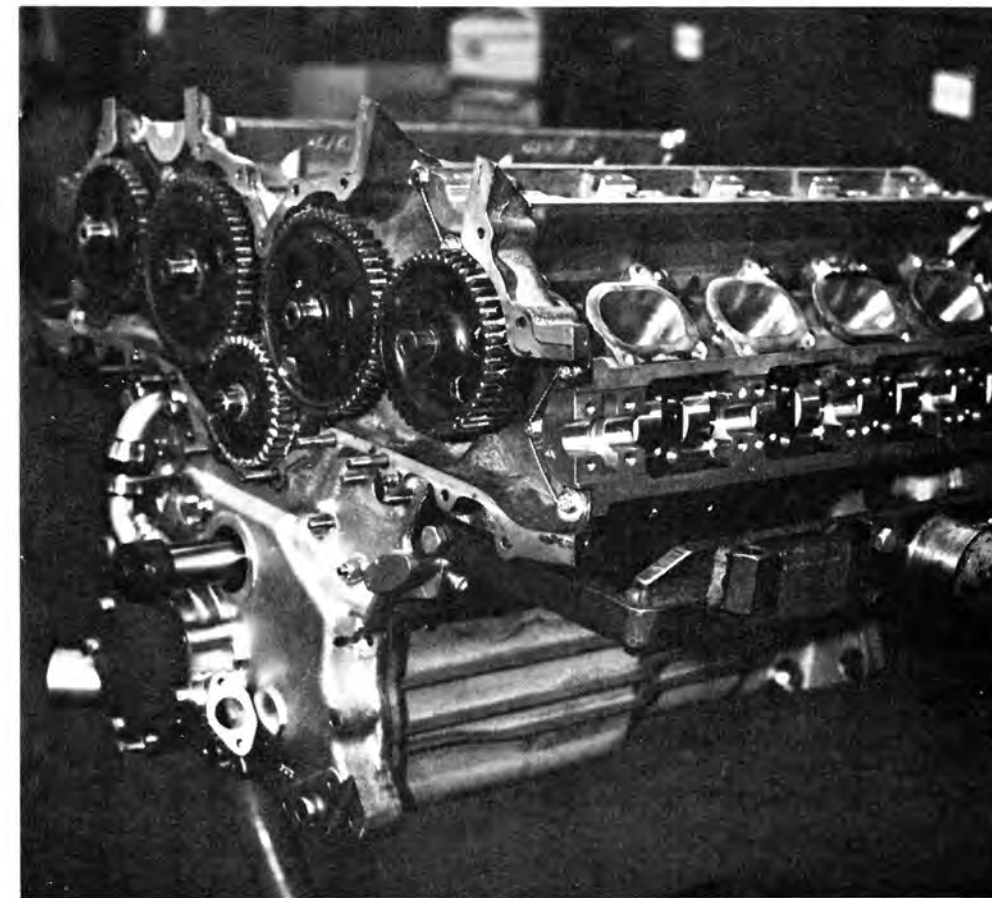
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idea to do this series of articles on what the big corporations actually are doing in the high-performance field these days. Maybe we can give you "one-make" guys some powerful ammunition to use in your bench racing sessions, when you're sitting around in the garage trying to put down all the other one-make bugs. Just facts now, guys!

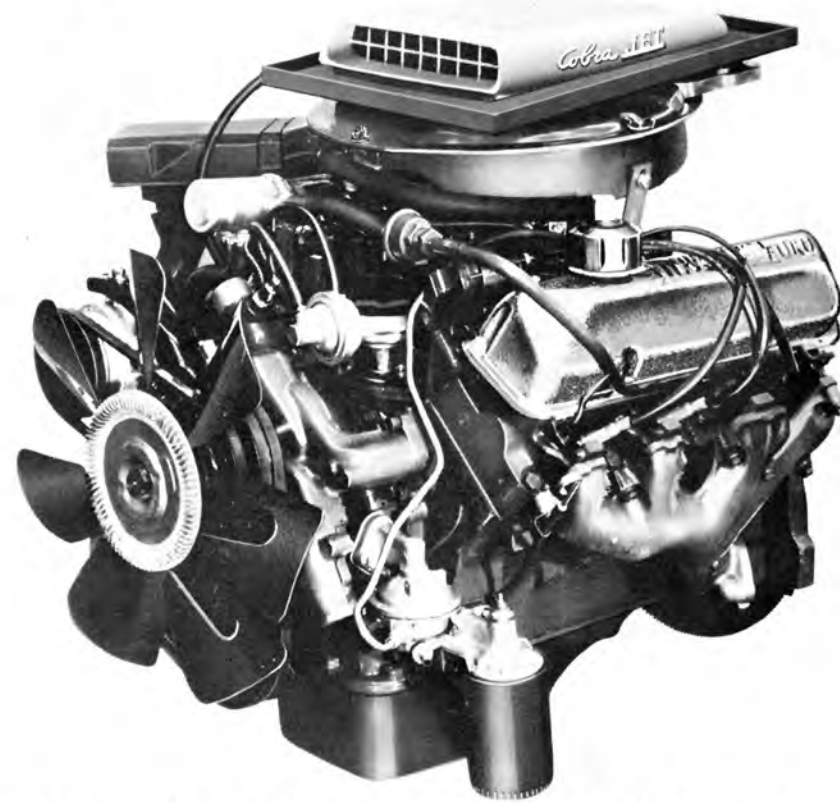
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Of course the first thing we have to realize about Ford is that they're spending millions of dollars a year on an extensive racing program that covers practically the whole world. In Europe they're involved in Formula 1 Grand Prix racing, LeMans, International sports car racing. They're building specialized racing engines for Indianapolis. They're deeply involved in NASCAR Grand National stock car racing, drag racing in many different classes (including sponsoring some of the quickest funny cars in the country) and Ford is starting to feel their way into various forms of boat racing. And don't forget the speed record runs at Bonneville. They sponsored Mickey Thompson's latest wheel-driven world record car (which was rained out this year), and Thompson's group broke a flock of stock car records with Mustangs powered by 302 and 427-cubic-inch tunnel-port engines. And finally there's the American road racing scene. Ford is getting deeper into Group Seven "Can-Am" racing, in various forms of SCCA class racing, and the 302 Mustangs are fixtures in the popular new Trans-Am sedan racing series. Ford is gradually working into practically every corner of American and European auto racing.

And they're not just fanning the air. They're getting results — big results. The new three-liter Ford V-8 four-cam engine is the one to beat on the European Formula 1 circuits. Several car makers use it. Ford won the 24-hour LeMans sports car race three years in a row, against the strongest cars in the world. The Ford 255-cubic-inch four-cam Indy engine has revolutionized the American Championship racing scene in the last four years. They ran the old "Offy" out of business — until the Offy boys adopted a turbocharger to get 625 horses from 168 cubes. A turbo-Offy won the Indy race last May. So now we hear Ford will have a turbocharged V-8 in 1969 that will yank 700 hp from the new displacement limit of 161-cubic-inches! Sometimes you



Ford revolutionized the Indianapolis scene with an exotic four-cam V-8 that gave 500 hp from 255 cubes on alky. Four valves per cylinder gave fantastic breathing, and strong bottom end allowed 9000 rpm. But they cost \$23,000 each!



The new '69 Cobra Jet 428 engine is one of the strongest street engines available today. Special big-port heads, big Holley carb, hot hydro cam and streamlined headers help. Note air scoop on top.

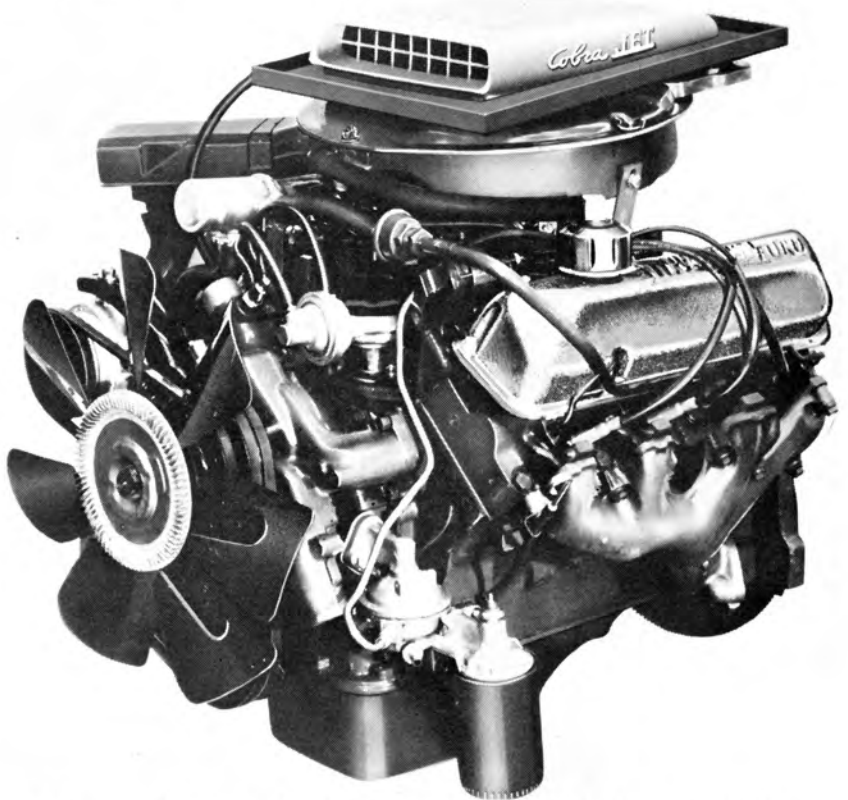
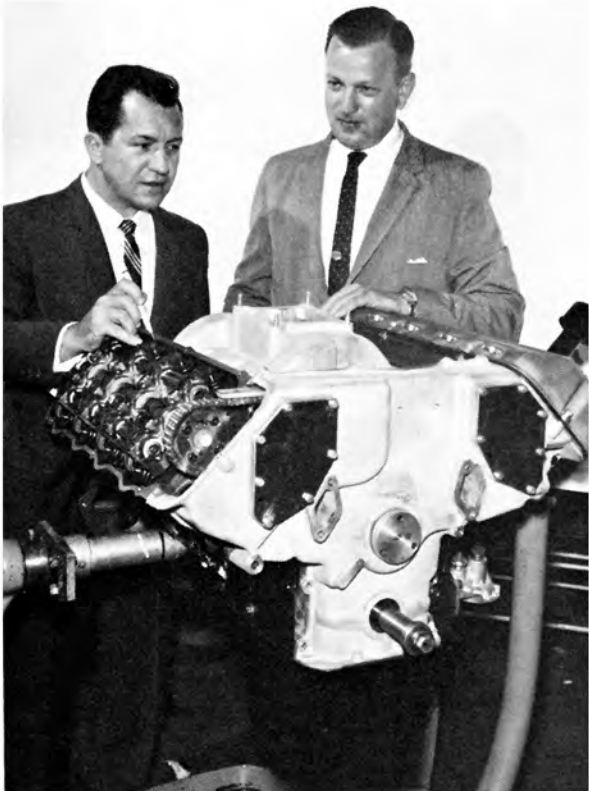
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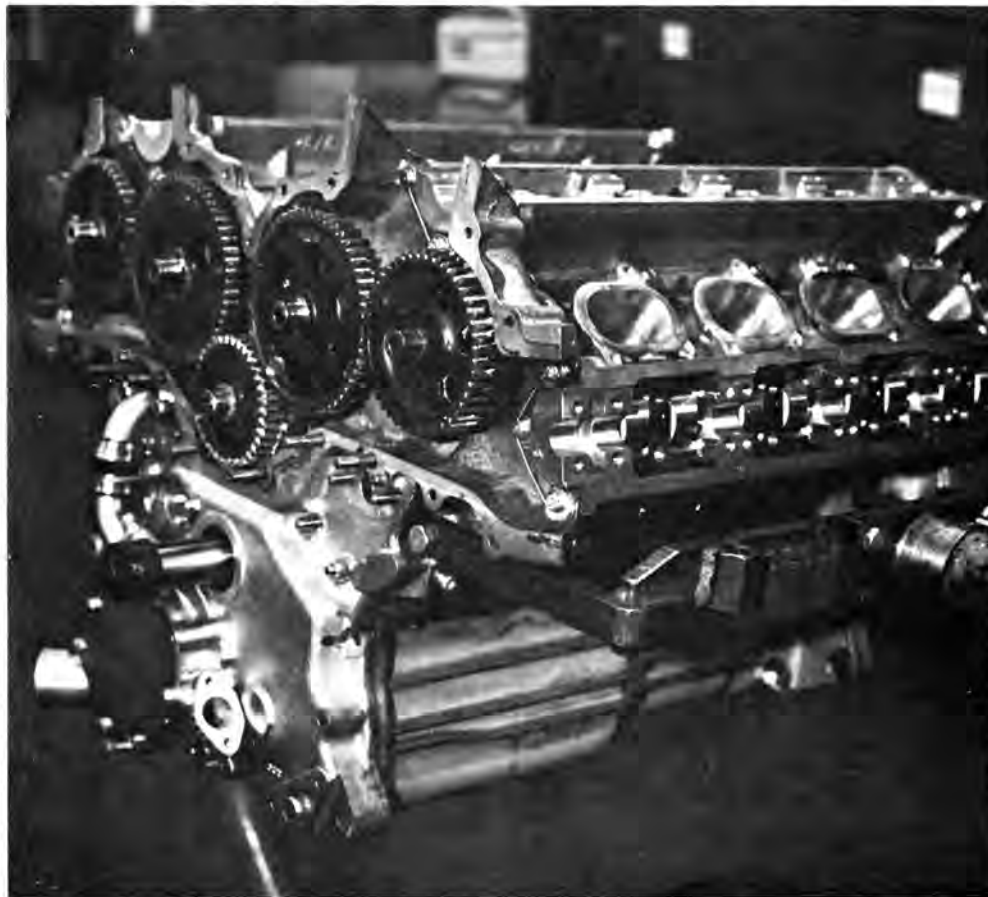
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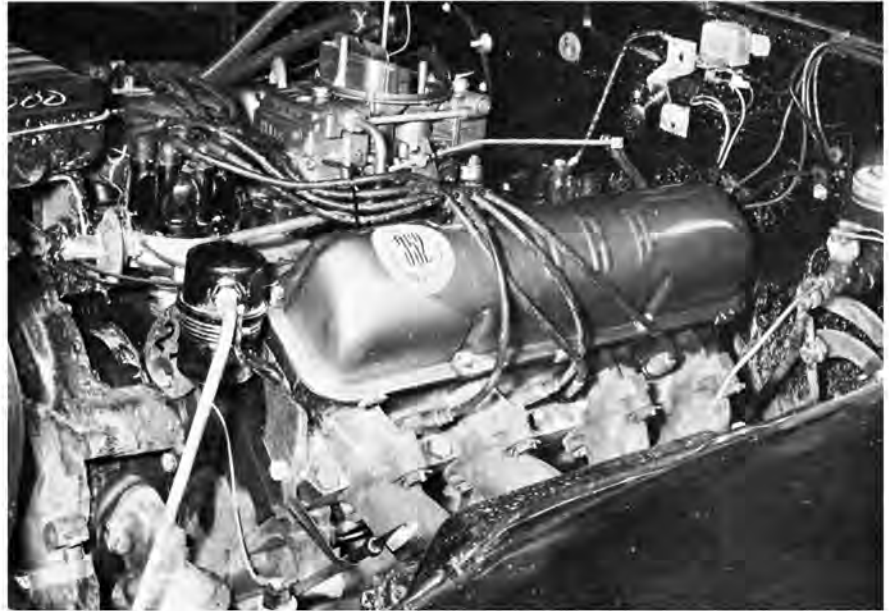


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serve by pushing others into bold new developments, then jump in there and do a *better* job yourself!

Ford is tough on the NASCAR tracks. In the '68 season Cale Yarborough was top money and point man in a Mercury, and Fords certainly won their share of races with an "obsolete" wedge engine against the exotic Chrysler Hemi. And already in '69 Ford has taken a commanding lead on the NASCAR circuit. First there was Richard Petty's win at the Riverside 500 in February in his first try as a member of the Ford team. Then Lee Roy Yarborough and his Ford Talladega nailed down the top spot at the Daytona 500 after a tough duel with Dodge's Charlie Glotzbach. And finally, Ford's David Pearson, who had run the fastest-ever qualifying lap at Dayton (190,029 mph), stormed to a convincing win at the Carolina 500 in Rockingham, N. C. In drag racing the Ford single-overhead-cam 427 engine powers some of the hottest dragsters, funny cars and gassers in the country. Names like Nicholson, Schartman, Grove, Ronda, Montgomery, Robinson, Baney, Platt, Terry and Payne are making a big dent in the drag racing classes. In the stock and Super/Stock classes the 427 wedge and 428 Cobra Jet engines are winning more than their share. In Group Seven Can-Am sports car racing the 427 Chevy engine has been dominating this last season. But toward the end of the season Ford made up a few all-aluminum 427 tunnel-port engines that started to show good. And watch out in '69 when they get the new 429-cubic-inch "stagger-valve" NASCAR engine into the Can-Am cars! You're going to see *more* — not less — of the Ford name in sports car racing.

So we think you'll agree that Ford has been getting some real results from their million-dollar worldwide racing program. And we don't think we should discredit them by saying Ford is trying to literally overwhelm the racing scene by spending tons of money. Admittedly the current Ford factory racing program is undoubtedly the most extensive in the history of the automobile industry, in this country or in Europe. Even the fantastic government-financed Grand Prix racing development done by Mercedes and Auto-Union in the 1930's never came close to the current Ford program. But we say to give credit where it's due. GM could be doing the same thing if they were willing. We think Ford should be given credit for standing up to be counted in the wild world of professional racing. They don't win all the time. They've had their knocks and disappointments. They've risked their reputation on a hundred racetracks around the world. They've accepted the good with the bad. We think a manufacturer should get a lot of credit for sticking his neck out. It's easier just to sit back and watch the others have at it.



Ford offered the first of the modern Super Stock engines in 1960 — their high-performance 352 at 360 hp. It had a beefed up block and lower end, special exhaust headers, all the goodies. It set a pattern that holds today.



New stagger-valve arrangement and improved combustion chambers on Ford's 302 small-block may mean a reversal of last year's dismal showing on Trans-Am circuit. First reports say that the new 302 really wails!

And we don't think there's any question that the Ford Motor Co. has benefitted mightily from this racing program in the last three or four years. Space won't permit a lot of discussion here, but we can cite a number of cases where technical lessons learned on the race track have helped engineers to

beef up production parts for better durability. Like on the rear axle, suspension components, wheels, transmissions plus several internal engine parts. Ford cars are better today because of their racing program. If a car will stand up under the grueling conditions in racing you can bet that every-

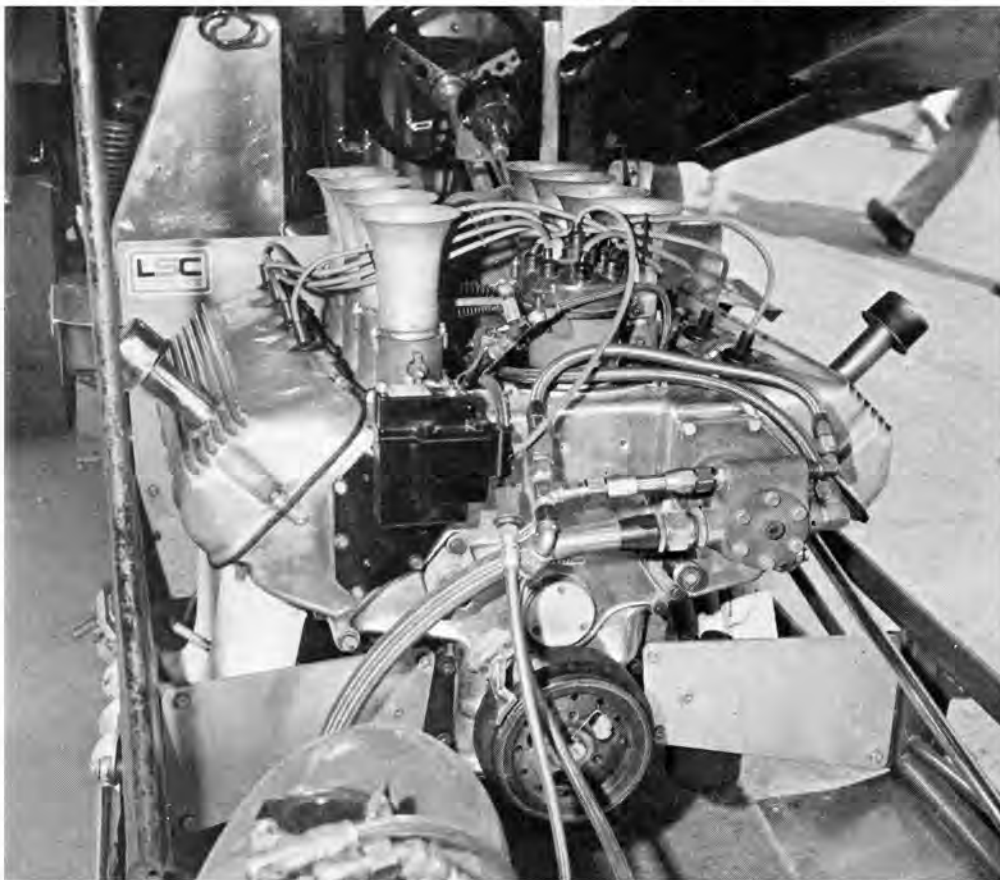


Old reliable 427 wedge has proven to be a tiger on the NASCAR circuit in '69, just as it was in '68. NASCAR four-barrel restriction doesn't seem to have hampered performance. Shown is Smokey Yunick's "trick" log-type manifold that he used at Daytona.



David Pearson's Ford Talladega set a new qualifying record at Daytona (190.029 mph) and was victorious at Carolina 500. Ford's racetrack victories have started to tell in ever-important sales figures.

Many Ford OHC 427 engines are being used today in competition cars all over the country. They can pull over 1000 hp at 8000 rpm on nitro fuel with injectors—unblown! And the strong bottom end and light valve gear allow shift points up to 9000!



Ford definitely fell behind in the youth market in the late '50's. But ever since Ford's first 360 hp Super Stock in 1960 they've been coming on stronger and stronger in the youth market. And since the all-out racing program started in '64 it's been more and more of the same. The young car buyers seem quite impressed by Ford victories on the racetracks of the world, and even by the fact that they're out there racing, whether they win or not. This has been worth more than all the multi-million-dollar advertising that Ford could buy on radio and TV and in the papers. Racing is actually the cheapest type of publicity. Ford is making it pay off.

On the other hand all the racetrack victories in the world won't sell cars to the young guys if you don't offer models that will do the job on the street. Admittedly Ford has had their ups and downs in this area. But the late 428-cubic-inch Cobra Jet high-performance engine for Mustangs and Fairlanes (and Cougars and Montegos) is back in front again. None of the GM or MoPar supercars — except possibly the MoPar 426 Street Hemi engine — its stronger. When the 428 CJ engine is mounted in a Mustang or Cougar, both of which are 200 or 300 pounds lighter than most of the other super cars, you've got a tough combination. Remember that GM and Chrysler don't offer their biggest, strongest engines in their smallest, lightest cars. Ford has moved ahead of them in this area.

day use on the road — even severe heavy-duty use — isn't going to break it.

Of course a few engineering improvements probably can't justify a million-dollar racing program. The racing should help sell cars. And it certainly has in Ford's case, especially

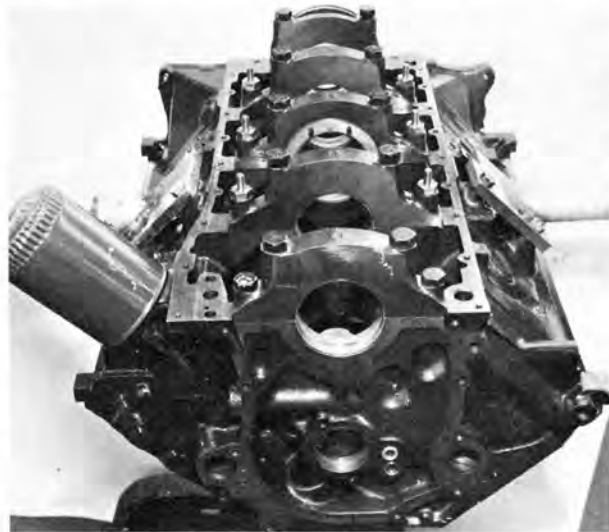
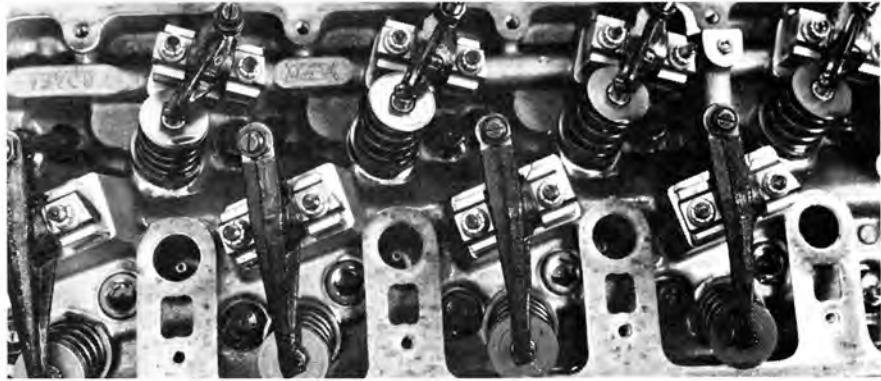
in the booming youth market. Some of you will remember the infamous anti-racing edict by the Automobile Manufacturers Association (AMA) in 1957. Ford stuck to that edict to the letter, while some of the other companies did under-the-table racing and performance development. As a result

The day when Ford high-performance models were second best on the street is long past. The moderately-priced 428 CJ has taken care of that. And the beauty of it is that it's smooth and flexible and easy to drive,

as well as having super power and torque. It's one of the sweeter high-performance engines in the industry.

If some of you bench-racers like to use a past history of important performance developments as your ammunition, Ford has a lot to talk about. You only have to go back to 1960 to find the first of the modern factory "Super Stock" engines - Ford's high-performance 352 rated at 360 hp at 6000 rpm. Previous optional performance engines had been more or less standard engines with a few bolt-on goodies like a hot cam, higher compression, dual exhausts, two carbs. But Ford's new design used a special beefed-up cylinder block, stronger rods, pistons, bearings, special oil pump and lube system, special streamlined cast iron exhaust headers, big-port cylinder heads - plus all the usual goodies. It was an engine *built from the ground up* for super street and strip performance. Ford's idea set a pattern that is still being followed today. In 1963, we saw the first special Indianapolis engine modified from the production 260-cubic-inch Fairlane pushrod V-8. Ford Engineering made a lot of special parts for it; but the final race engine was basically a *production pushrod design* - yet it put out 375 horses on pump gas from 255 cubes, qualified in the second row in the Lotus rear-engine chassis, and Jim Clark took second in the '63 Indy race with it. The following year the

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Ford's newest big-block threat is the 429 stagger-valve "hemi" that you've heard so much about. Beefy four-bolt mains and great head design give indications that more victories are in the works for Ford's racing teams.



Mustang Mach 1 lends itself well to racing, both drag and Trans-Am. Parnelli Jones had proto-type Trans-Am car at Daytona for the Citrus 250 and was fastest car on the track until transmission troubles forced him out.



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special two-cam 16-valve heads were developed for this engine, with special aluminum cylinder block, bottom end and lubrication system to take the increased power and crank speeds up to 9000 revs. The improved breathing gave 500 horses on alkyl at 8600 rpm, and the age-old Offy engine was finished at Indy. Several hundred of these Ford Indianapolis engines have been sold to private buyers in the past five years and they've brought a new level of performance and reliability to American big-time Championship track racing.

The emphasis in recent years has been on racing equipment that is more closely related to corresponding production parts. The '63 Indy pushrod engine formed the basis for a successful 289-cubic-inch LeMans engine. About this time there was a need for a super-power engine for drag strip competition cars, adaptable to gas or fuel or to supercharging or fuel injection. The answer was a beautiful set of single-overhead-cam cylinder heads adapted to the production 427 block without major tooling changes. Result: well over 600 hp at 7200 rpm on gas and carbs, with a safe rev range to at least 8500. Outputs over 1600 hp with nitro fuel and supercharging have been measured, and with reasonable reliability! The OHC 427 never was used in assembly-line cars; but production economies eventually dropped the in-the-crate price to \$3000, and hundreds of those engines are powering competition cars all over the country. Another Ford first.

The OHC 427 engine was never eligible for NASCAR racing because there wasn't enough production to consider it "stock" equipment. So some brilliant performance development has been done in the last three years on the old pushrod 427 wedge engine. For instance hollow-stem lightweight valves pushed safe revs from 6500 to 7400. "high-riser" head ports and intake manifold passages improved breathing by eliminating sharp turns. Cross-bolted main bearing caps and cross drilled cranks helped the bottom end to live at these speeds. In fact a LeMans version of this engine had a sophisticated dry-sump lubrication system with chain-driven dual scavenge pumps in a cast aluminum pan that could run all day at 7000 rpm.

The latest gimmick on the 427 wedge is "tunnel-port" heads. Huge, around intake ports that go straight into the valve, without having to squeeze and curve around the pushrods. The pushrod goes right up through a steel tube in the middle of the port. Looks crazy, but it breathes. Over 600 horses from 427 cubes on gas and two four-barrel carbs for NASCAR. And over 450 hp from the 302-cubic-inch Trans-Am small-block engines with the same type of heads! This tunnel-port idea was a brilliant

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development that came out of Ford Engineering that may contribute to the performance of other pushrod wedge engines in the future.

All these developments mentioned above, in fact, are first from Ford.

And there are many others we could cite in the general performance field: like the all-synchromesh three-speed manual transmission in '63; full ram air induction from grille scoops on the '64 Super Stocks; fiberglass hoods on '66 supercars; the first low-priced specialty sports car in the form of the '64 Mustang; the first low-profile tires in '64 and the first Wide Ovals in '67; the first optional radial-ply tires in '67; the first "Sportshift" manual automatic in '66. And we could go on and on.

So far we've been talking about past developments. But how about some annunciation on what's happening right now—today—and what Ford will do to shake up the performance and racing world in '69?

Certainly the big news right now is the new high-performance 429-cubic-inch stagger-valve engine that has been developed for NASCAR, drag and sports car racing this next season and will eventually replace the 428 Cobra Jet engine for high-performance street machines. This is the basic large-block lightweight engine that was introduced on the '68 Thunderbirds (and now used as a premium option on other lines). Special aluminum hemi-type cylinder heads have been developed for the racing version that feature huge round ports, 2.40-inch intake valves, domed combustion chambers with central spark plug, and forged rocker arms on six individual pressure-lubricated shafts for maximum reliability. The engine is unlike anything that has ever come out of Detroit before. And yet it uses basic production block tooling, simplified cam drive, no special accessory gimmicks, and is actually fairly simple, economical engine to build. And the power is there. They talk about 650 horses on gas with one four-barrel (as the engine will run under '69 NASCAR rules) and the sky is the limit from here. Maybe 700 horses with fuel injection for the Can-Am sports cars, and perhaps up to 1800 hp on fuel and supercharging for dragsters and funny cars. The weight with aluminum heads is a little over 600 lbs. complete. But the word is that this will be cut another 90 or 100 lbs. for the Can-Am guys by developing a new aluminum block.

Much of Ford's future in the competition field rests on this engine. They're spending a lot of money on it, and it's a beaut. And we think it's going to do the job. NASCAR racing should be a breeze, especially in the new "Model T" Fairlane fastback with the dropped hoodline and airfoil spoiler over the rear deck. (Incidentally, you will eventually be able to buy this wild body in the showroom with a 428 Cobra Jet engine.) We think Ford will be in good for the big Group Seven Can-Am cars. Aluminum 427 Chevy engines have been dominating

here, but Ford wants to change all that with the new hemi 429. It has the potential on paper. Weight is critical here, though, and Ford will need to tool up an aluminum block to beat out Chevy. They want to bad enough enough to do it!

And don't worry about the drag strip. Ford engineers assure us that the new 429 is a lot stronger than the OHC 427 as far as the breathing goes. The OHC actually has smaller ports and valves, even though there was no space problem with pushrods! The OHC has less valve reciprocating weight, so it can wind tight. But the clever valve gear and super-strong bottom end on the 429 will allow shift points up to 9000 rpm, and you can't do much better than that! Forget the OHC 427 for the strip. And then when you start to think about a street version of this new 429 engine, which is definitely coming by next fall... well, anybody for a healthy 500 horses on the street? MoPar and Chevy lovers beware!

For all you small-block lovers, Ford has gone to work and updated its 302 to keep up with the 302 Chevy in Trans-Am racing. After '68's disappointing showing on the Trans-Am circuit with the tunnel port 302, Ford engineers made some refinements to the small-block engine, including a new set of stagger-valve heads that makes the 302 a much more potent engine. Along with better rods, pistons, cam and block this year's 302 should be more than competitive with the Chevys. And the new parts be will available to the hot rodder so that he can update his own small-block terror!

Ford's image at Indianapolis took a beating last May when a turbocharged Offy won the race after the four-cam Ford V-8 had been dominating for several years. This is one of those embarrassing setbacks that even big companies are bound to get on the racetrack now and then. But we can look for Ford to fight back in '69 with new turbocharged short-stroke versions of the V-8, developing up to 700 hp at 9500 rpm from 161 cubes. Prototypes had lots of teething troubles last May; but if Ford is willing to spend a few bucks developing this engine—which it looks like they will do—it should be a world-beater. But they may cost as much as \$32,000 each!

Well, we could go on and on about what's good about Ford in the performance business. They're definitely into everything and really getting results. Sure they're spending money. But that's no argument against the results, as long as the racing program pays off in sales profit for the company. And apparently it's doing that. Furthermore, we look for bigger things from Ford in performance and racing next season. They may not spend more money, maybe less; but they will get more results per dollar with the new 429 stagger-valve engine. And when this wild thing gets on the street... watch out!