

ALICE BIXLER

# NASCAR: THE TORRID ZONE

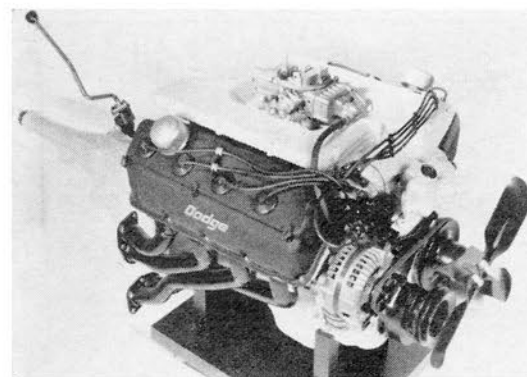
BY ROGER HUNTINGTON

## Heat From the Hemis, Warmth From the Wedges Forecast for '66

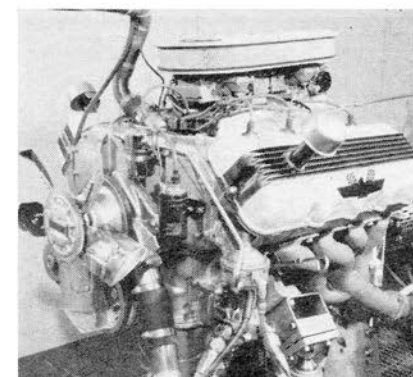
**T**HE LIVES OF stock car racing rules-makers are not simple. NASCAR officials can tell you that. In 1964, when hemispherical-head Dodges and Plymouths were cleaning up on the wedge-head Fords, NASCAR decided to ban the 426-cu. in. Hemi because it wasn't a "volume production engine, readily available to the public." NASCAR also banned the sohc 427-cu. in. engine that Ford engineers were preparing to beat the Hemi. NASCAR officials thought this would make everybody happy. The Chrysler 426 wedge engine supposedly was fully competitive with the wedge Ford and competition would be evened up.

Things didn't work that way. Ford was happy again, but Chrysler, disgusted, dropped right out of NASCAR racing. Instead, Chrysler threw more effort into USAC stock car racing, where the Hemi engine still was legal, but where money was scant. Then, of course, NASCAR races became a parade of Fords and Mercurys. Crowds diminished. Promoters lost money and shouted at NASCAR officials. Things came to a head fast. In the middle of the '65 season NASCAR made an unprecedented rule switch. The Chrysler Hemi engine was again allowed; but was required to be used with a minimum wheelbase of 119 in. on the fast, banked speedways. It could only be used in the 116-in. Dodge Coronets and Plymouth Belvederes on tracks of less than a mile length—and then only with a minimum weight of 4000 lb.

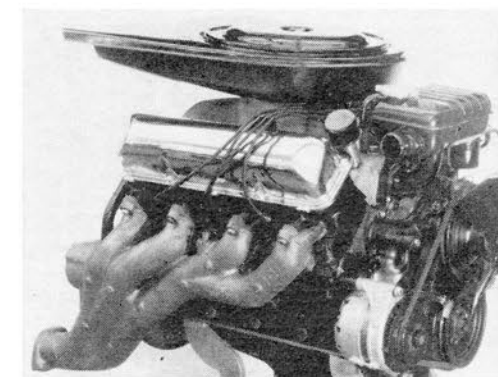
Result: The racers and the fans were only half happy. The Hemi-powered cars won more than their share on short tracks, but Chrysler officials declined to build a fleet of 426-powered Dodge Polaras and Plymouth Furys



POTENT Dodge Hemi engine is a threat to NASCAR Fords.



FORD'S unknown quantity is the sohc 427-cu. in. engine.



OL' RELIABLE, Ford's 427 wedge head was 1965 NASCAR champion.

(over 119-in. wheelbase) for a few weeks of racing on the speedways, so Ford continued to dominate these events. It appeared to be two different types of stock car racing.

Now we're looking at the 1966 season and it's an entirely new picture. For one thing, NASCAR and USAC officials have gotten together on one basic set of rules for all major American stock car racing. In fact, these new rules are designed for eventual acceptance by the FIA to govern production car racing the world over (with certain modifications). The important thing, however, is that any given car now is able to compete in either NASCAR or USAC races, and drivers of both groups can race on even terms in certain major events. (The Hemi engine controversy caused all kinds of difficulties in combined NASCAR-USAC races last season.)

Here are the essentials of the new 1966 rules:

Cars are grouped in two categories for major races. Category I quotes a maximum piston displacement of 427 cu. in., minimum wheelbase of 119 in. and minimum weight of 4000 lb. with gasoline, oil and water aboard, but no driver. Category II is for cars with a wheelbase between 116 and 119 in. Maximum engine size for this class is 405 cu. in. for the speedways of over one mile length and 427 cu. in. for the short tracks. Minimum weight here is computed on a basis of 9.36 lb. per cu. in. subtracted from the 4000-lb. and 427-cu. in. level of Category I. In other words, a Category II car with 405 cu. in. can weigh about 3800 lb.; but with a 427-cu. in. engine on the short tracks it must be ballasted to 4000 lb.

The above was the easy part in writing the new rules. The big problem was controlling the engines. In other words, how could special hand-built racing engines be kept out of stock car racing, with everybody remaining reasonably happy. Doing this with a few written rules is not as easy as it sounds. NASCAR-USAC officialdom is trying a new tack this season. Major races are claiming races on the engine assem-

blies. The claiming figure has been set at \$2000, less camshaft and carburetor. This means that any bona-fide NASCAR or USAC member can post a certified check for \$2000 prior to a race and claim a particular engine at the end of the race. He must accept the engine regardless of its condition at the end of the race.

NASCAR and USAC officials believe this rule will prevent the factories from hand-building a few special engines for just a handful of top drivers. Yet the rule allows limited-production engines just aimed at NASCAR and USAC races. This is the whole idea. It has been proven time and again that any factory that wants to win stock car races will build special equipment that is not available to the general public. It's almost impossible to police this, and race officials don't try, but what they don't want is factories supplying special engines and parts to a few selected teams with rank-and-file members left out in the cold. This has been the case in times past. Officials want all special racing equipment to be freely available to all member racers at prices the large majority can afford.

NASCAR and USAC officials hope the new \$2000 claiming figure will do the job, along with the stipulation of posting a maximum published list price on engine assemblies of \$1000. This puts an arbitrary value of \$1000 on blueprinting and tuning.

**R**IGHT NOW it seems the new "dollar" rules won't cause any problems with the Chrysler Hemi engine. Currently the 426 competition Hemi with aluminum heads carries a list price of \$1800. Chrysler and NASCAR officials are still wrestling with this one. It may end up that a cast-iron "Street Hemi" will be declared "standard" in the race cars, with the aluminum heads and special 4-barrel manifold available as optional over-the-counter equipment, not included in the published list price. Or, it's possible that Chrysler may sell at a loss 100-150 engines for 1966 NASCAR and USAC needs, to meet

the \$1000 list price figure. It's no great problem.

Ford's overhead-cam 427 problem is tougher. This engine is really expensive to build and tooling isn't being developed fast enough to ease a production bottleneck. As this is written there's a dealer list price on this engine of \$4500. It's supposedly available to the public. But is it? Who has heard of anyone buying one in a crate? The handful of drag racing men who are running 427s have trouble getting parts. Whether Ford can actually build them for \$4500 each without losing money is debatable. Ford has plans for more efficient production tooling that could bring the cost per unit well below \$2000.

From a reliable no-quote source comes this statement: Ford has every intention of running its sohc 427 engine in NASCAR and USAC competition next season! As far as Ford is concerned it's a "production" engine. If Ford has to drop \$250,000 or so by selling engines to NASCAR and USAC racers for less than \$1000 to prove it, apparently Ford will do so! The question is still up in the air with race officials. But it probably will be worked out to everyone's satisfaction. The factories and race promoters and rules-makers are working more closely together now than they ever have before.

Another reason why Ford is determined to use the sohc engine next season is that it intends to run only the Galaxie in Category I on the fast speedways and probably on the short tracks, too. Those big, heavy cars with 427 wedge engines would not likely be competitive with the lighter Dodges and Plymouths. Fords need all the brute horsepower they can get and the sohc 427 can deliver about 100 bhp more than the wedge. Another factor: Ford doesn't consider a smaller, lighter Fairlane with a sohc 427 engine a particularly safe combination for Category II. The new '66 Fairlane has a wheelbase of 116 in. and would be eligible for this class. But the sohc engine weighs over 700 lb. and Ford

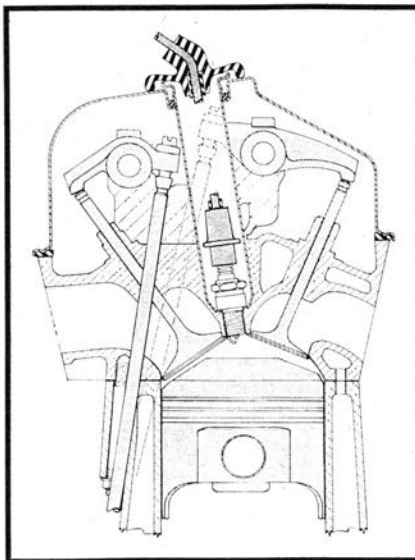


# NASCAR

fears the combination would be nose-heavy and unstable at 180 mph on the fast speedways. Ford people don't want to go this way. Ford also cites the fact that the Galaxie is the company's volume line, so it is the logical model to run in a stock car race for publicity purposes.

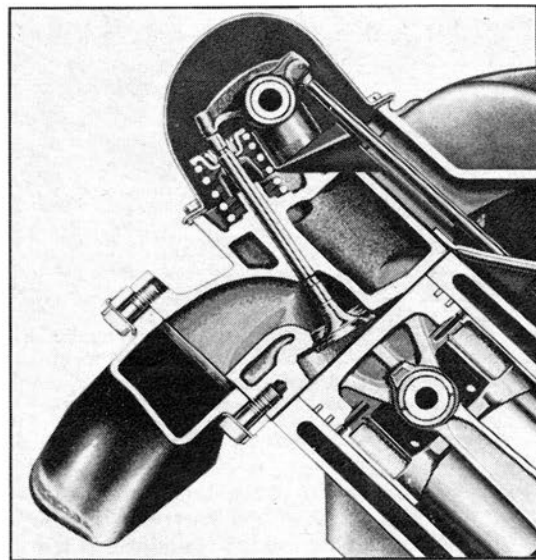
This is why Ford has a horsepower problem coming up next season. Ford wants to run the Galaxie in Category I and the sohc engine is needed to provide the horsepower necessary to be competitive. However, as this is written, there is a good chance that some sohc 427 Fairlanes may be tried on the short tracks against the 426 Chrysler products. High-speed stability is not a critical factor here so it mainly would be a problem of traction with the heavy engine in front. Nobody knows yet how the combination would work. It took builders months to get the 426 Hemi Chryslers to work right on short tracks. Traction and torque problems were similar to what Ford's will be.

How about Dodge and Plymouth? They have recently announced their 1966 intentions without pulling any punches. They will run Dodge Coronets and Plymouth Belvederes (wheelbase 117 and 116 in., respectively) in Category II with the Hemi engine in all major races. On the fast



THE SHAPE of things to come is in Chrysler's Hemi head.

speedways they will run with 405 cu. in. and 3800 lb. and on the short tracks (and road races) with 426 cu. in. and 4000 lb. It's as simple as that. Corporation officials point out that they could have entered cars in Category I with 426 Hemi engines in the longer Dodge Polaras and Plymouth Furys. But they believe their cars can go faster on the speedways with 405-cu. in. engine in the smaller Coronet and Belvedere bodies. They believe the reduced frontal area and wind resistance will more than offset the loss in horsepower by having 21 cu. in. less displacement (30 bhp or so). Tests this winter have indicated this. And on the short tracks, where Dodges and Plymouths can use 426 cu. in. in these smaller bodies, the shorter wheelbase will be an advantage

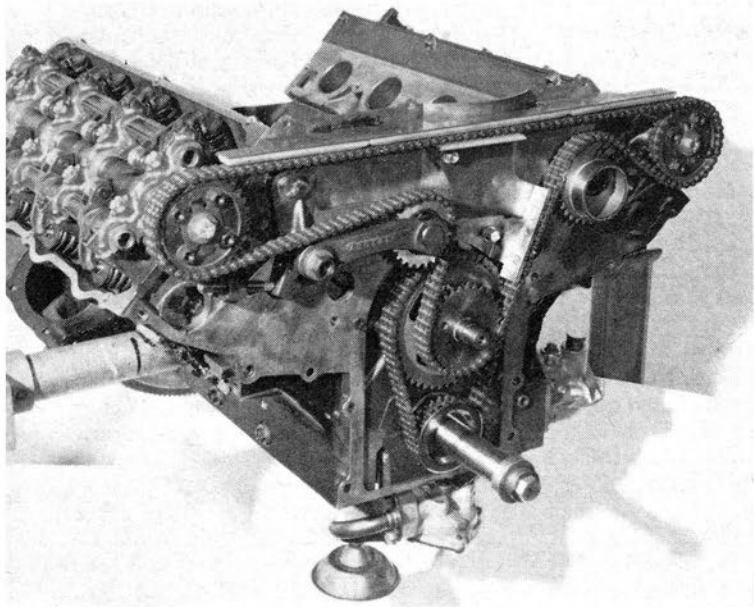


THE SHAPE of things that go is in Ford's wedge head.

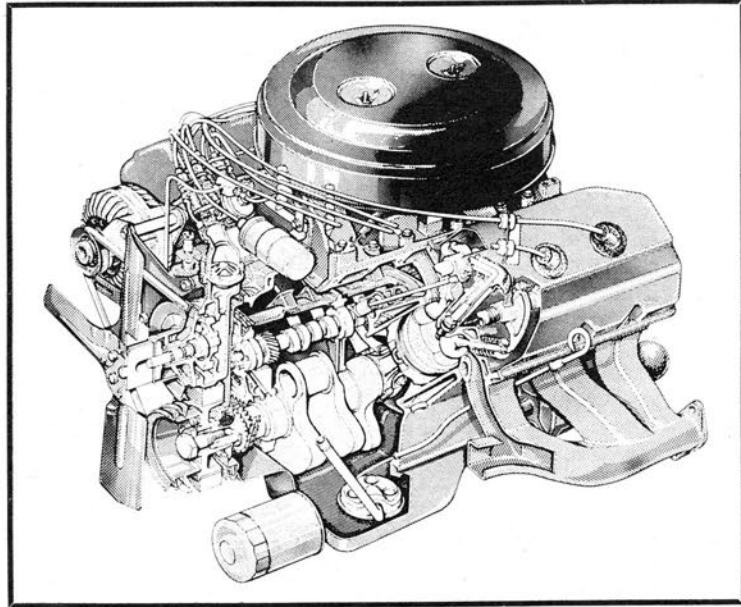
in cornering and maneuverability, though the cars will carry ballast to 4000 lb. to equal the larger Galaxies.

In accordance with this plan, the Chrysler Engineering Department under Bob Rodger has reduced the displacement of the 426 Hemi to 405 cu. in. by shortening the stroke 0.19 in. and retaining the original bore of 4.25 in. Connecting rods are lengthened to make up the difference and a new intake manifold has been designed to fit under the lower hoodline of 1966 bodies. Otherwise there are no important changes on the new racing engines. The 405 and 426 versions will be used interchangeably on long and short tracks. Rodger hopes the 405 version, with its shorter stroke, will offer a little less friction and slightly more rpm po-

OVERHEAD CAMS are chain-driven in the Ford 427-cu. in. engine—to see NASCAR action in 1966.



THE PLYMOUTH Hemi is expected to dominate short track competition during the 1966 NASCAR season.



tential so its bhp will not be reduced in direct proportion to the reduction of cubic inches.

Dodge and Plymouth will be very competitive through 1966 with these Hemi-powered Category II machines.

Now there's the perennial question about Chevrolet and Pontiac in this stock car racing picture. Everyone knows giant GM is officially out of racing of all kinds and there just cannot be any really aggressive action by any of the divisions. But we keep hearing rumors of high performance racing parts coming out of "back doors" of Chevrolet and Pontiac engineering departments and under-the-table support for professional racing teams. What can we look for in 1966?

A safe prediction is, very little. There just isn't any story here. There just isn't any appreciable racing activity going on in GM today and there won't be any in the foreseeable future.

Admittedly, there is a very small trickle of "heavy-duty" parts coming out of Chevrolet and Pontiac these days. For example, Chevrolet supplies a very high performance service cam and some special Thompson forged high-compression pistons for the Mk. IV 427 engine, which would be just the ticket for NASCAR racing. But Chevrolet doesn't make a special racing intake manifold. A street manifold must have its heat risers blocked to suit it to a racing 427! Does that sound as though Chevrolet is serious about racing? Same with Pontiac. A few special super-duty parts for current engines and chassis are available, but most of the equipment is left over from the 1963 program. Very little new engineering has been done, at least that is available in racing hardware today. Pontiac will

offer some very high-performance developments in the next few years for use on the street, not on the racetrack.

Chevrolet and Pontiac absolutely will not support any NASCAR teams this season. It is conceivable, with the liberal NASCAR rules as to special engine performance equipment, that the Mk. IV Chevrolet V-8 could be competitive. But, without substantial factory support, no private team could get more than a lucky win now and then. Of course, the basic 421 Pontiac engine isn't even of contemporary design any longer. A '66 Pontiac couldn't win even now and then. Color GM out.

**WHO WILL GAIN** the upper hand between Ford and Chrysler? This is an interesting question. Assuming Ford can use the sohc 427 engine, there is little question that it will have a margin on horsepower. The performance of these sohc engines on the dragstrips in A/FX and exhibition cars indicates that Fords put out perhaps 5-7% more peak bhp than Chrysler Hemi engines in equal states of tune. This apparently is because of more port area which is not restricted by pushrods passing up through the heads. Admittedly, the sohc Ford engine has not reached its full potential in the rpm department. With early cam grinds only 7200 rpm was available before valve float occurred. Then the range went to 7600, then to 8000 when Ford released cam blanks for specialty cam grinders to experiment with. There still seems to be a quick power drop-off above 7600 rpm and the usable rpm range does not extend anywhere near 8500 rpm as was originally expected for this engine. The Chrysler Hemi reaches 7500 rpm with relative safety

and delivers near its maximum power at that speed. The valve gear limits the speed above this, however, so it is not certain that the new 405 block will be able to achieve more revolutions.

Another factor in the bhp picture is that late rules limit single 4-barrel carburetors to a maximum throttle bore size of 1.6875 in. This is somewhat smaller than some carburetors that have been used in the past, which means a bit more breathing restriction. (The rule is to prevent use of special hand-built racing carburetors that are available to only a select few.) Under the above rpm limits and carburetors sizes, no more than an honest 630 bhp at 7400 rpm for the sohc Fords next season—as compared with a top of around 600 bhp at 7200 for the 426 Hemi Chrysler—can be predicted. If all goes well, the 405-cu. in. Hemi should generate 580 bhp at 7400.

A look into the crystal ball shows the sohc 427 Galaxies should be slightly faster on the long banked speedways. The Galaxies will weigh at least 200 lb. more than the Dodges and Plymouths, but car weight is a small factor in all-out top speed. It's pretty much a matter of bhp vs. frontal area. The Fords should have 50 bhp more than the 405 Chryslers and only about 2 sq. ft. more frontal area (24 vs. 22 sq. ft.). Bet on the Fords on the speedways, but not on the short tracks. Here all the cars will weigh about the same and the Fords may have 30 bhp more. But that little difference of 2-3 in. in wheelbase length could be vital. The smaller Dodges and Plymouths are more maneuverable. Bet on the Chrysler products on the short tracks. In the occasional road races it will be a toss-up. ■

**RICHARD PETTY** showed what the Hemi can do in 1964 with a Daytona Speedway lap record at 175.096 mph.



**WILL DODGE'S** fastback Charger be competitive in NASCAR events? It could be short-track king.



**FACTORY FORDS** and independent Chevrolets will battle, but Chevrolets need factory help, too.



**MORE 1966 Ford Galaxie** hardtops than any other car will appear in NASCAR events this season.

