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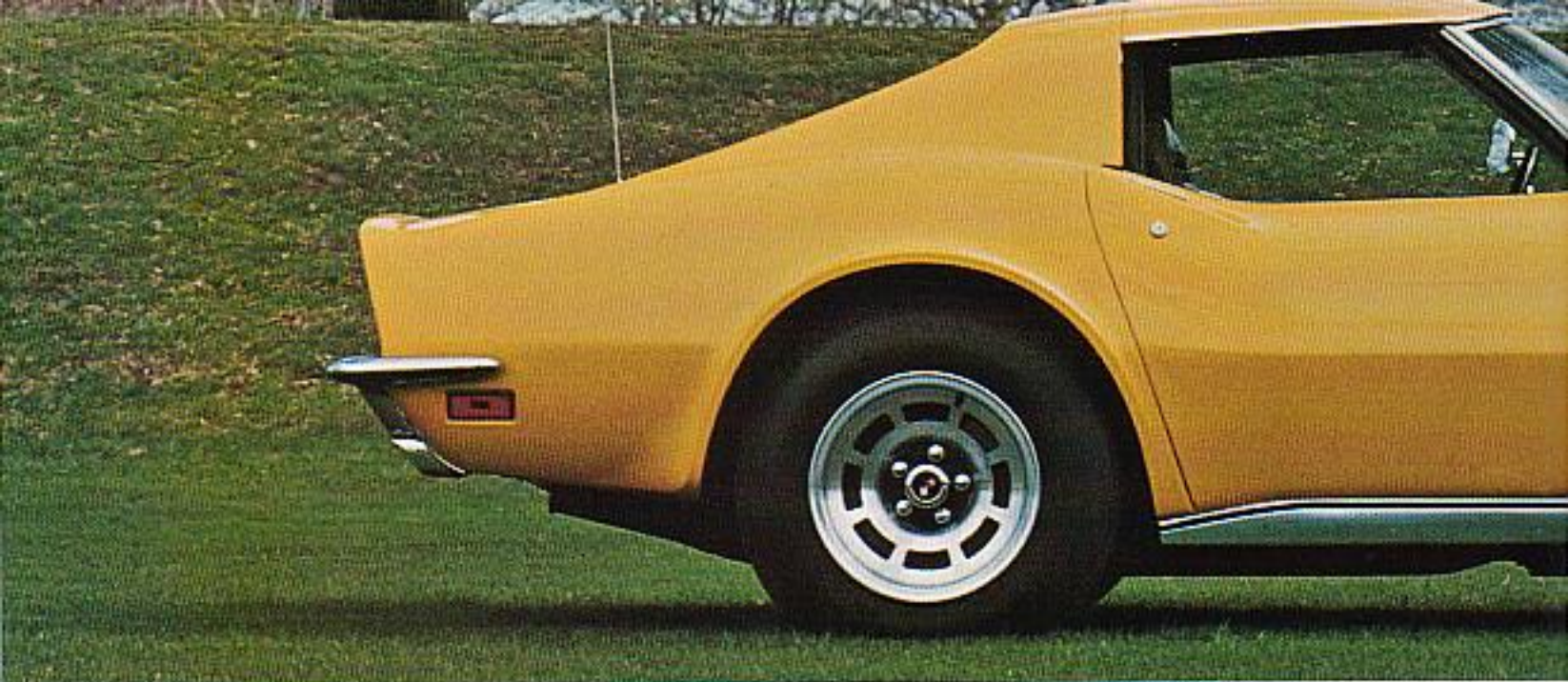
# CORVETTE NEWS

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OCT/NOV 1972







Years of planning and exhaustive testing go into any new car before the buying public ever sees it. Individual components are run through an exhaustive series of tests in the lab to check out the strength of metals, wear properties and overall durability—tests that tax the performance of each part far beyond what most drivers will ever subject them to.

The total car also undergoes a series of rigorous tests at the General Motors Proving Grounds. Braking tests. Acceleration tests. Dust and water tests. Wind tests to measure the car's stability. Tests on road surfaces the average driver may never encounter in a lifetime; surfaces so rough that a car can be literally torn apart at speeds over 30 mph.

But the ultimate test is how the car performs under everyday driving conditions.

That's why, on July 17 of this year, a group of Chevrolet engineers set out from the Milford Proving Ground on a three-day road test to Louisville, Kentucky and back. A shakedown cruise to find out if the 1973 Corvette was really the car they thought it was.

Five cars made the trip. Four of them were pilot cars, built on the assembly line, as assembly test units prior to full scale production. The fifth was a prototype, a pre-production model with many hand-built parts which had been run for 5,000 miles on the Belgian Blocks at the Proving Ground. The proto was equipped with a 454 engine as was one of the pilot cars. Two of the pilot cars were powered by the base 350 cubic inch engine. The fourth pilot car was equipped with the optional 350 cubic inch L82 engine which boasts hydraulic lifters, a Rochester Q-jet carburetor and 9.0:1 compression ratio. Three of the cars were equipped with Turbo Hydra-matic transmissions, two with a 4-speed, and all had power steering and brakes, with the exception of one of the small blocks which had manual brakes.

*Corvette News* talked with two of the engineers who made the trip; Walter C. Zetye, Assistant Staff Engineer in charge of Corvette chassis and power trains, and Robert A. Vogelei, Assistant Staff Engineer in charge of Corvette body. We were escorted around Chevrolet Engineering by Rudy DeMumbrum, a highly-qualified engineer and a member of the Chevrolet Production Information Group.

We asked Mr. Zetye why they made the trip.

"We've taken many trips before and we've looked at a lot of things. Tires on one. Body mounts on another. This is really the first time we've had the pilot line cars where we've had everything all together, so to speak."

We were also curious as to why they had picked that particular destination.

"The round trip from Milford to Louisville and back was approximately 875 miles. On Tuesday, the second day of the trip, we circled the Cumberland Lake area, a distance of some 313 miles. It proved to be an excellent testing ground to prove the car's handling ability and performance because of the many winding roads and steep grades in that particular area. Our chosen route also gave us the opportunity to check out the new Corvette under varied driving situations from high-speed super highway driving to rough back roads. In total, we traveled approximately 1,200 miles, a distance that could easily be covered in three days without taxing the cars or the drivers and still allow us time to critically evaluate the total car. (Editor's Note: *CN* knows what kind of roads he's talking about. See the Kentucky Road Hunt Story, Volume 15, Number 6).

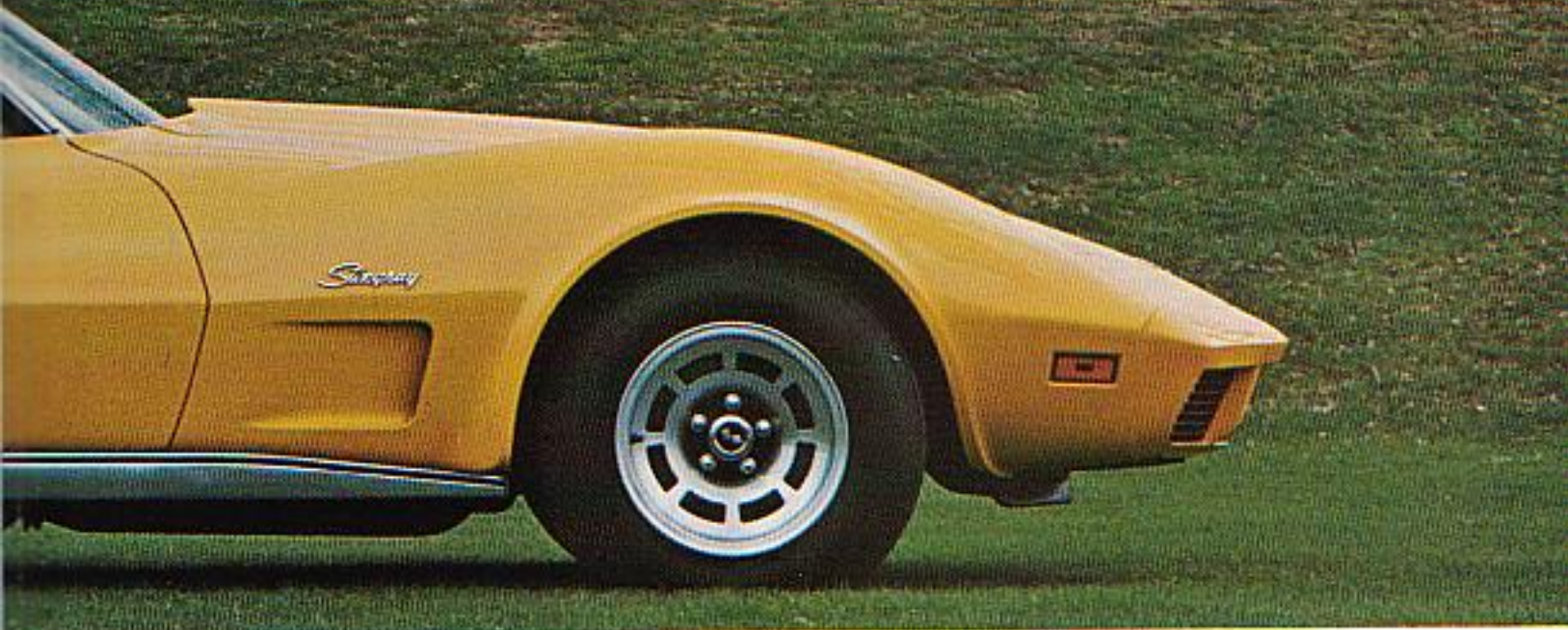
We were keenly interested in what power train changes had been made for 1973 and why.

Said Mr. Zetye: "In order to meet the emissions control standards and still give Corvette owners the kind of performance they have come to expect, we are offering a number of new chassis and power train modifications for 1973. The LT1 350 cubic inch engine with mechanical valve lifters has been replaced by the 350 cubic inch L82. The most noticeable change on this optional engine is the use of hydraulic lifters as opposed to solid lifters. We've also replaced the Holley carburetor with a Rochester 4-barrel Q-jet and net horsepower is rated at 250. The use of the hydraulic lifters not only provides for quieter street operation but enables us to meet 1973 Federal noise standards.

"The 350 cubic inch base engine has been carried over from last year as have the M-20, four-speed transmission and the M-21 four-speed close ratio transmission. However, we have discontinued the heavy-duty 4-speed M-22 transmission which was offered with the optional LT1 last year. Turbo Hydra-matic will be offered for all engines. The 454 cubic inch engine option is again available in '73 and has a net horsepower increase from 270 to 275. All engines have a new tuned exhaust system with larger mufflers to control noise levels and all are equipped with the Exhaust Gas Recirculating System (EGR)."

One of the most interesting and unique additions for the 1973 Corvette is the new carburetor-air induction system which was designed to improve the operational efficiency at





maximum acceleration of all Corvette engines. This accounts for the newly styled Corvette hood which features functional grille and duct work designed to supply outside air to the engine induction system.

An inlet grille is centered in the hood at the base of the windshield. Below this grille is a duct which is formed as an integral part of the hood. The duct, running forward to the carburetor air cleaner, carries outside air from the grille to the engine induction system and from the plenum chamber to the passenger compartment. Inside the duct is a solenoid-actuated door, or air valve, with a protective screen. When actuated under heavy acceleration, the solenoid positions the air valve in a wide open position, permitting the system to draw in large quantities of outside air.

A feature that many Corvette owners have been interested in for a long time is tires. For 1973, steel-belted GR70-15 radials are standard for Corvette—replacing the F70 x 15B nylon wide ovals used on the 1972 models.

"The radial tire has long been praised for its wearing qualities, excellent ride at high speeds and superior tracking, particularly on wet pavement," said Mr. Zetye.

"We did a great deal of testing before we finally selected the new GR70-15 steel belted radials. Exhaustive studies were made on tires from the leading manufacturers. We feel that all of the much-praised features of radials are incorporated in these tires, as well as other significant features. Not only should tire mileage be increased significantly, but traction should be improved as much as 60%—under wet conditions. Our tests have already shown a 6% reduction in stopping distance from 60 mph on wet surfaces. Overall, these radials will provide cooler and freer running with more impact resistance, while providing greatly improved driving comfort and ride.

"But," warns Mr. Zetye, "just because radials are standard on the '73 doesn't mean that owners of older Corvettes should go out and buy a set of radials and put them on their car. The tires are just one of the new '73 features. The new cushioned body mounting system, the quieter passenger compartment and suspension refinements such as shock valving, front springs, front stabilizer shaft and  $\frac{1}{2}$ " more ride travel front and rear, all work together to give the 1973 Corvette improved riding comfort, without sacrificing its superior handling qualities and sports car feel."

We questioned Bob Vogelei further as to just how much riding comfort has been improved by incorporating the new

cushioned body mounting system, as opposed to the current solid mount system. We also asked how the car rode from a passenger standpoint as well as a driver standpoint.

"Well," said Mr. Vogelei, "I'll tell you a little story. Early in our development program I took home one of our 1972 cars which had some of the 1973 treatment—the sound package, the body mounts and the radial tires. I handed the keys to one of my neighbors, who just happens to be a Corvette owner, and told him to take it for a spin. I didn't care where he drove it or how long it took. I also suggested he take a neighbor friend of his along who happens to own a Jaguar. I didn't tell either one anything about the car. I just told them to hop in and take a ride.

"Well—they came back later and said: 'Good grief. What did you do to that thing?'

"I told them that it was part of a package we were presenting as part of the 1973 car. They promptly informed me that we would never be able to build them that good. Well, I told them that we'd soon find out when we built our pilot models and prototype cars. After all, these things that we'd done are not unknown. They've been done in the automotive industry for a long time. The body mounts are a known art. The sound-deadening is a known art. We're just applying them to this car.

"They both had nothing but praise for the car, and I may even have a Corvette convert. The only reason I'm relating this story is that one was the driver—the other a passenger, and both got the same reaction. I think everyone that was on the pilot line trip felt the same way.

"However, I think one of my first reactions when I got in the car was that I could sit and play my AM/FM radio and talk to my driving companion without having to raise my voice. This, of course, is because of the substantial improvement that we've made in the '73 in controlling sound disturbances within the body.

"Large quantities of sprayed-on asphalt deadener have been applied to most of the interior panel surfaces. We also have an improved dash mat, better insulation of the steering column and a new hood blanket. Mastie has also been liberally applied to such items as the kick pads, hinge pillars and rear quarter trim panels, while the floor carpeting insulation has been increased from  $\frac{1}{4}$  to  $\frac{3}{8}$  inches. We feel that these sound deadening properties have got to be a giant step. And, just to reiterate what Walter Zetye said, we didn't make any compromise—sacrificing handling for riding comfort. Ride has





been much improved, but it's a cumulative thing—the tires, suspension—the engine mounts.

"Actually," continued Mr. Vogelei, "handling isn't my thing in the body group, but we do a lot of driving—probably far more than the average customer. Now I don't specifically go out and try to spin one, but I could detect quite a difference between what the older cars could do and what the new cars can do as far as typical customer handling. And maybe it's a bit beyond typical because I don't consider an engineer to be a typical customer. He's kind of a super critical guy.

"In fact," said Bob, "I was rather concerned on the trip back. We had left Louisville around 6:30 a.m. (Detroit time) and we had a good 10 to 12 hour drive ahead of us. When I got to the Proving Ground in Milford, I still had a three to four hour drive ahead of me, as I had to drive up North to join my family for a short holiday.

"I figured that after 10 or 12 hours in the Corvette—trying to keep up with everyone on the tour, I really didn't look forward to the next 180-200 miles. But I got into my car and headed north. I was up there in another three hours and was still ready to keep on going. If this is a way of measuring tolerance, I really don't know, but it sure told me a lot about the car."

Mr. Vogelei was instrumental in the development of the new energy-absorbing front bumper system.

"We really knew we had our work cut out for us on this one," said Bob. "On the other passenger cars in the Chevrolet line, the frame was large enough and there was enough room to incorporate an impact system that works very much on the same principle as a shock absorber. Not so with the Corvette. Forward of the front crossmember, the frame is very narrow and quite deep. There's very little room to play with so, naturally, we had to devise a system that was specific to the car. The basic Corvette frame, between the suspension, is the stiffest of any in the Chevrolet line."

What they came up with is truly unique, using a metal extrusion technique similar to that used in wire manufacture.

Energy is absorbed upon impact by a die moved along a draw bolt. The bore of the die is smaller than the bolt diameter and, as the die is moved, it moves metal to resize and elongate the bolt. This working of the bolt metal absorbs energy at a controlled rate to meet the barrier impact requirement, the bolt taking about half of the shock of the impact, drawing metal as it does. Other elements of the car absorb the rest.

The new bumper surface for 1973 is a resilient, body color urethane pad which covers a heavy gauge steel bumper filler. After impact, the urethane pad restores to its original shape



with little or no visible evidence of the bump.

"However," said Bob, "once the car has been subjected to a five mile an hour barrier impact, both the draw bolts and the steel bumper filler must be replaced. If not, the results of the second bump will become evident.

"Speaking of impact requirements," said Bob, "you might also be interested in knowing that the rear end more than meets the government standards, having survived a barrier impact at more than 2 and a half miles per hour, which is the minimum, with no damage whatsoever. And, occupant protection in the event of side impact, has been even further increased in the 1973 Corvette with the new side-guard door beams."

Although the '73 didn't get a complete face-lifting, there are enough new features to give the car an unmistakable '73 distinctiveness.

"The grille and duct work necessary to incorporate the new carburetor-air induction system gives the hood a totally new look, while the color-keyed "soft" front bumper gives the car a longer, lower appearance. The front fenders have also been restyled, as has the front exterior identification, which features the crossed flags set inside a bright circle bar containing the words "Chevrolet Motor Division—Corvette."

The current windshield wiper door and operating mechanism are eliminated.

"We found that reverting back to a standard wiper system has contributed to improved summer ventilation," said Mr. Vogelei. "In the past, with the doors raised during wiper operation, air flow was deflected. The new design provides a smoother line, larger openings and less obstruction to allow more circulation of air through the cowl plenum. One of the cars on the trip was not air-conditioned. I was most surprised to find that, in spite of the heat and humidity we encountered, air circulation within the passenger compartment was more than ample."

The 1973 also has a fixed rear window on the coupe model, in contrast to the removable unit of last year's body. We were informed that this, too, was a plus feature. The removable rear window units on earlier models had to be reinstalled in just the correct position, or they would have a tendency to leak. Also, the window, once removed, was stored on a tray in the luggage area behind the seats. Elimination of this tray for '73 provides approximately two more inches of vertical space, allowing owners to lay a garment bag across the top



of their luggage.

A new coolant recovery system is standard on all Corvette power trains. It utilizes a "closed" cooling system, with the radiator completely filled with coolant. Heat-expanded coolant is released through the radiator cap pressure relief valve and deposited in a remote plastic tank, quite similar in design to the plastic windshield washer fluid tank. As the fluid in the radiator cools when the engine is shut down, a vacuum is generated that returns it to the radiator. This, in addition to a new, larger radiator core, contributes to improved cooling efficiency, and the plastic tank provides a visual gauge of coolant level with hot and cold levels clearly indicated.

A total of 10 exterior colors is offered for the 1973 Corvette—all exclusive to the line. Six are new, with four carried over from 1972. The new additions are: Silver Metallic, Medium Blue Metallic, Blue/Green Metallic, Yellow, Yellow Metallic and Orange Metallic. The four carryovers from '72 are: Classic White, Elkhart Green, Dark Blue Metallic and Mille Miglia Red. Combined with this wide choice of exterior colors is an optional black vinyl roof cover for the hardtop, and a choice of black or white folding convertible tops.

Although many of the standard interior and exterior features remain unchanged for 1973, there are three options that we feel should be of particular interest to prospective buyers.

One is the new cast aluminum wheel option which will be made available shortly after start of production. It provides a new appearance and a substantial weight reduction for improved ride. This new wheel is eight pounds lighter than the steel wheel and reduces the vehicle weight by as much as 32 pounds.

The second option is a new inside rear view mirror/map light combination. Offered for the first time, it provides both the passenger and the driver with reading convenience during after-dark driving conditions, while eliminating the need for full compartment lighting during vehicle standing or running operations. The light is beamed downward toward the center console and passenger side. (Editor's Note: See *Corvette News*, Volume 15, Number 2).

If the responses to our *CN* reader survey are any kind of a barometer, we could say that the third option is being brought to you by popular demand. Now—for 1973, you can purchase an optional outside rearview mirror.

The *Corvette News* staffers were just as curious to find out about people reactions to the Corvette on the pilot line trip as they were about the car itself.

Said Walter Zetye: "They recognized them as Corvettes. There was no question about that. We seemed to attract the most attention when we stopped for lunch and they were parked all in a row. One gal asked us if we were a Corvette Club traveling around. Another gentleman came up to our lunch table one day, admiring the cars. He had two daughters and each had a Corvette."

"They knew there was something different about them" said Mr. Vogelei, "but I didn't think the average person knew what it was. It was like 1968 when we came out with the concealed wiper system. The conversation would go something like this:

"What's different about this car?"

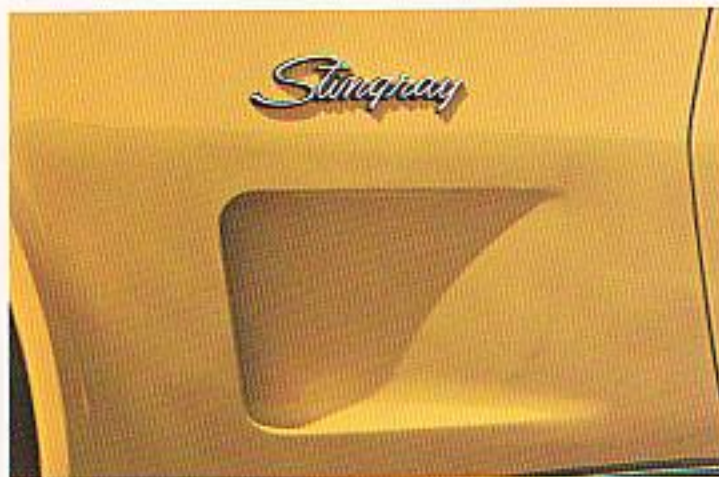
"Well—that's a new car."

"What about the windshield wipers?"

"Well—what about them?"

"They had been used to not seeing wipers because they had been concealed in a 'trough' design. When I pointed out the fact that you couldn't see the blades, and there was no trough, they'd comment: 'By golly—you're right.'

"You had to bring their attention to the fact that there was no wiper system to be seen. Then, we'd pull out the little button and the trap door would open and they'd say: 'By golly—that's great.' I think we got the same reaction to the new front end. They knew something was different, but they didn't know what."



"We didn't have any mishaps at all on the trip," commented Mr. Zetye, "except for one of the group who twisted his knee in the motel swimming pool and is still walking with a limp. As for the cars, they performed admirably. Even the proto car that had been subjected to 5,000 miles of testing on the Belgian Blocks at the Proving Ground. It performed as well, and exhibited the same superior ride and handling abilities, as the four pilot cars."

"There's no question about it," said Bob Vogelei. "The 1973 Corvette is far superior to the 1972 as far as ride and comfort. I think I can best express my feelings about the car this way. A while back, we had a program put out for us called the quantum jump—or the giant step. I think that's the kind of position we'd have to take on this car. We've made a giant jump in these improvements.

"But, before engineering takes all the credit," added Vogelei, "the plant deserves a pat on the back. They've done a tremendous job in trying to produce a car that is built to design intent. If you can do that, you'll have a great car, and that's just what they are doing."

Bob Vogelei also told us that each car is carefully evaluated at the Proving Ground, each driver filling in a numbered rating sheet that rates everything from braking to handling, suspension, comfort, styling, etc., on a 1 through 10 scale.

"I happened to pick up a rating sheet one day, just to see how the car was being evaluated by the various drivers. It was obvious from the numbers that had been circled that this particular test driver found the car superior in every respect. Then I turned the sheet over. He had made a comment on the back which I have never seen before—'this is the greatest Corvette I have ever driven.'"

## PERFORMANCE ENGINE SPECIFICATIONS

	1972	1973
	RPO L11	RPO L82
NET HORSEPOWER	255 @ 5600 rpm	250 @ 5200 rpm
NET TORQUE	280 @ 4000 rpm	265 @ 4900 rpm
DISPLACEMENT	350 cubic inches	350 cubic inches
BORE and STROKE	4.00 x 3.48 inches	4.00 x 3.48 inches
COMPRESSION RATIO	9.0:1	9.6:1
CRANKSHAFT	Forged Steel	Forged Steel
CAMSHAFT	SoFid Lifters	Hydraulic Lifters
INLET VALVE HEAD SIZE	2.02 inches	2.02 inches
EXHAUST VALVE HEAD SIZE	1.60 inches	1.60 inches
CARBURETOR	Holley 4-bbl.	Rochester G-Jet 4-bbl.
EXHAUST SYSTEM	2.50 Dual	2.50 Dual
FUEL	No Lead, Low Lead or Regular, 93 Octane or above.	No Lead, Low Lead or Regular, 93 Octane or above.