

# 1990 CORVETTE

ZR1

*"ZR-1 is Corvette, only more so."*

Dave McLellan  
Corvette Chief Engineer

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## 18 Colors, Trim and Features

ZR-1 is the most completely equipped Corvette ever. Choose from seven exterior colors and five interior hues.

*This is the Corvette ZR-1 story, premiere edition.*

*Few automotive developments have been awaited with such anticipation as the ZR-1 option on the 1990 Chevrolet Corvette.*

*This catalog will provide you with a closer look at the high-content, highest-performance Corvette that is destined to become a new world standard in production sports cars.*

## *Corvette Conquers Carcassonne*

After rousing reviews at the Geneva Motor Show, the ZR-1 captivates the international press in a spirited romp through the south of France.



Ever since the rumors began—at least three years ago—the introduction of the Corvette ZR-1 has been the most eagerly anticipated event in the history of performance cars. The enthusiast press passed along to their readers every scrap of technical detail they could locate, every rumor, every fuzzy spy photo and every evasive “no comment” from the tight-lipped Corvette engineers in charge.

By early 1989, anticipation was turning to frenzy. No automotive writer had even driven a ZR-1, yet more than one cover story suggested that Chevrolet was about to unleash one of the world's best-balanced, fastest, most powerful production sports cars. It made for lively copy, but there was still an aura of mystery surrounding the “Corvette to come.”

Chevrolet soon confirmed that the ZR-1 would be introduced at the beginning of the 1990 model year. This intro date provided an unusually comprehensive long-term testing program for the all-new 32-valve V8 engine and also coincided with the restyled interior design making its debut on all 1990 Corvettes.

Traditionally, new models are announced to the press several months in advance of public showing at events called “long lead” previews. The lead time is necessary so the monthly magazines can have driving impressions and photos available to their readers at new-car introduction time. Chevrolet often holds these showings at the General Motors Proving Grounds in Milford, Michigan, and sometimes at U.S. racetracks.

Chevy had never held a new product preview in Europe. Until now.

*“Welcome, boys and girls, to a new age in American automotive history. That new age is ushered in by an engine whose technical specifications read as if they were written in Modena, only better...”*

*Automobile*

*“Twice, after driving hard all day on French roads that ranged from challenging to hostile, we emerged unscathed and unbrutalized by the ZR-1. This feeling of freshness after a long and difficult drive is the stuff of which great grand-touring cars are made.”*

*Car and Driver*

The ZR-1's “coming out party” was held in and around Carcassonne, a medieval city in the south of France. The invitation list included the world's most prominent automotive journalists, including press corps from the United States and several European countries.

After an official unveiling at the Geneva, Switzerland, automobile show, members of the press were able to spend several days and several hundred miles in production-specification ZR-1 Corvettes.

The journalists had the enviable task of driving the

ZR-1s from Geneva through the French Alps to the southwest corner of France near the Pyrenees.

The ZR-1 proved beyond doubt its world-class credentials on autoroutes, on twisting mountain roads and in the approving looks of the local citizenry. The Corvettes passed castles and ancient farmhouses, drove down incredibly narrow byways and past awestruck faces of French citizens, many of whom had never seen a Corvette before, let alone thirteen of them.

Even the local *gendarmes* couldn't resist checking things

out. One officer pulled a ZR-1 over, signaling with his hands that he wanted to see the engine. At every stop, Corvette was a *cause célèbre*.

The ZR-1, on Europe's own turf, served notice that there was a new order to the world's finest sports cars. But don't take our word for it. Sample the June 1989 issues of *Road and Track*, *Car and Driver*, *Motor Trend* and *Automobile* for the full report from Carcassonne. And significantly, the enthusiast press on *both* sides of the Atlantic has been saying some very nice things:





*"To choose anything other than a ZR-1 for a spirited, lengthy romp through France or anywhere else in the world is missing out on one of driving's most pleasurable experiences."*

*Road and Track*

*"The heat is on. And it's the European supercar makers that are going to feel it."*

*Autocar and Motor  
(GREAT BRITAIN)*

*"...the most exciting and responsible high-performance car ever conceived in Detroit, let alone ever built."*

*Car and Driver*



*"Der Terminator"*

*Auto Illustrierte  
(SWITZERLAND)*

*"The ZR-1 stands alone—a statement that deep down, Americans now seem to understand better than Europeans how best to design a muscular sports car for maximum driving pleasure."*

*Performance Car  
(GREAT BRITAIN)*



*"Lotus Corvette. We test the performance bargain of the decade."*

*Autocar and Motor  
(GREAT BRITAIN)*

*"Europe's own sports car makers had better watch out: America has just redefined the pleasure machine."*

*Performance Car  
(GREAT BRITAIN)*



*"...the ZR1 moves the Corvette out of its position as merely America's best sports car ...and solidly into the world class for performance cars."*

*Performance Car  
(GREAT BRITAIN)*



*"This car takes mountain turns—hard mountain turns—with a neutrality that would do credit to the Swiss banking industry."*

*Car and Driver*

*"America can play again  
in the long time European  
reigned sports car  
concert of exclusive high  
performance... the  
Chevrolet house revitalizes  
an old legend."*

*Auto Illustrierte  
(SWITZERLAND)*



*"This car ushers in a  
new era, in which we are  
no longer faced with  
either-or choices... now we  
can have it all."*

**Road and Track**

*Cars shown in this section are pre-  
production prototypes and do not represent  
1990 Corvette ZR-1 appearance exactly.*



## Technological Tour de Force

*In a way, the Corvette ZR-1 is the ultimate expression of the Chevrolet mission statement, which is to "give more than expected."*

*—Dave McLellan*

*Dave McLellan, Corvette Chief Engineer since 1975, is a "car guy." A GM engineer since 1959 and a sports car buff for as long as he can remember, McLellan took over "Corvette" from none other than the legendary Zora Arkus-Duntov.*

*When McLellan assumed command in '75, higher gas prices, lower speed limits and the performance-sapping effects of tightened emission controls had been seriously compromising many sports cars for several years. But even as public interest in performance cars waned, McLellan kept the faith, and he kept Corvette performance very much alive.*

*During the 1980s the pace of advancing technology quickened considerably for Corvette. The engineering challenges to McLellan had never been greater, but the compromise of performance was never an acceptable option.*

*While competitors have experimented with turbocharged Fours and Sixes, McLellan has kept Corvette as a V8-powered sports car, because only a V8 provides the level of refined, high-torque performance that Corvette buyers demand. The Corvette V8 engine has never delivered more horsepower on less fuel, with fewer emissions than it does today. Significantly, the boundaries of Corvette technology have expanded in many directions...to include a fully independent suspension with adjustable shocks, Bosch ABS II, a new-in-1989 6-speed manual transmission and much more.*

*Now McLellan and company advance the sports car art still further. In this interview, Dave McLellan reflects on the mission of and engineering philosophy of Corvette ZR-1:*

**Q: What is the purpose of a sports car, and specifically Corvette?**

A: It is our mission to build an automobile that excites us as engineers and designers of cars. Thus the Corvette is not necessarily a practical statement as an automobile but it, by its nature, maximizes everything that is exciting and fun about automobiles.

We also build Corvette for our customers and need to enthuse them with our vision and also to listen to them and their visions.

**Q: Is there a specific mission for ZR-1?**

A: With the ZR-1 we have taken all those attributes of the Corvette that we and the customer are looking for and pushed them to their practical

limit. For example, horsepower. We've increased it by more than 50 percent. We've increased the capability of the car and its ability to absorb the increased power. The fuel system has to deliver more fuel. There are bigger demands on the cooling system. Everything has to be rescaled to this new level. And if you have a car that is enjoyed for its handling, and Corvette is, we take that to its ultimate limit by putting state-of-the-world tires on it. You can see where we are today with the P275/40ZR-17 tires, and with the new wider rear tire—a P315/35ZR-17—that's all pushing on the boundaries of this car.

ZR-1 is Corvette, only more so.

**Q: So pushing technology to the limit is a philosophy that guides the Corvette program?**

A: No, I'd say it's the other way around. We and our customers are not looking for technology for its own sake. Example: a "CRT" display panel is technology for its own sake right now and you won't find it in a Corvette. The mission of this car is to allow the customer to fully explore the sport of driving.

**Q: Well said. Let's explore the ZR-1 in some detail. What are some of the important technological advances of the LT5 engine?**

A: When you look at the standard engine in the Corvette, we've pushed that engine pretty hard. We've

upgraded it with fuel injection and spark control. We've gone forward but it really is out there pushing on the boundaries given emission controls, fuel economy considerations, fuel octane requirements, etc. The LT5 has to meet the same boundaries as the current engine in the standard Corvette. But it gets a lot more output from the same size engine. It really pushed the envelope, in that sense of the word, by a lot. Not by 10 percent, but by a huge chunk. We are at roughly 250 HP in the standard 1990 Corvette L98 engine; we've gone to

*Dave McLellan, Corvette Chief Engineer, guided development of the aluminum LT5 dual-cam V8.*





375 with the LT5. That's about a 50 percent increase.

**Q: What was the involvement of Group Lotus? Did they have a clean slate?**

A: There were four main objectives for the LT5 program:

- Create a car that is second to none in acceleration—nothing less than one of the fastest production cars in the world.
- Achieve that kind of performance without sacrificing driveability, not only at the high end where you expect fast cars to drive well, but at the low end, too.
- Package all this leading-edge performance and driveability into an engine that could still deliver great fuel economy (EPA estimated 17 MPG City, 26 MPG Highway).
- And design this engine to fit between the rails of the existing Corvette's engine compartment—a brand-new engine, but not one that would require a totally new car.

So it wasn't a clean slate. Those were the parameters. Our guess was that the 32-valve LT5 would end up in the 375 HP range. Obviously, it was more than a guess.

Group Lotus in Hethel, England, which by the way is owned by General Motors, had design and certification responsibility for the engine. Then there's Mercury Marine of Stillwater, Oklahoma, who has manufacturing responsibility for the engine. They don't make all those parts, but they're responsible for the procurement, the assembly, the testing and the delivery of the completed engine to the Corvette Assembly Plant.

**Q: Why was Mercury Marine chosen to assemble the LT5 engine?**

A: Primarily we were looking at volumes that were much smaller than a typical GM engine plant. Our plan was to build 18 a day and the typical engine plant builds 1,000 a day. That was the first reason to look beyond a conventional process. We also had no intention of tooling the engine up as you tool a high-volume engine. Mercury was judged to be the manufacturing source that had the best process control capabilities, already demonstrated in the other engines they're building. In fact, they've set up a unique manufacturing system for this engine, self-contained in their Stillwater factory. Their quality control is excellent.

**Q: Explain the two tiers of LT5 engine performance.**

A: It occurred to us somewhere along the way that, since we were regulating the intake system, we could also regulate it at the customer's discretion. That's where the idea of the power key came from. Below 3000 RPM, at any throttle from light to full, you're really operating on the first of the two intake valves and the first of the two fuel injectors. That gives the engine good torque and smooth performance at low RPM. As you go over 3000 RPM at high throttle, you open the secondary system, giving the engine better volumetric efficiency and a new torque peak around 4800 RPM. So there's a dual nature to the engine.

**Q: Why a 6-speed manual?**

A: This transmission maximizes performance as well as cruising economy. Again, it pushes that envelope, providing a torque capacity upgrade to meet any future requirements. Most important, it represents a world-class shifting transmission. And let's be honest about it: that's something we didn't have before. The way we mechanized this transmission, if you accelerate in first gear at light throttle and then upshift into second gear at between 12 mph and 20 mph, instead of getting second gear, you're getting 4th. That's a reminder that, with the kind of driving you're doing, you really don't need second at that point. It's also part of the strategy for meeting EPA fuel economy requirements. The ratios you want to have for maximum performance acceleration are 1, 2, 3, 4, 5, but for best part-throttle fuel economy—let's call it "lazy driving"—you really are better off using 1, 4, 5, 6. That's how that came about.

**Q: Selective Ride Control has been described as a revolutionary suspension development. How does it work?**

A: Selective Ride Control represents one of our first major thrusts into dramatically improving the ride quality of the car, while maintaining all of the handling attributes. The objective of the system, basically shock absorber-based technology, was two-fold. To get excellent high-speed control of the car, we've been able to incorporate damping levels that are similar to what we use in showroom stock racing. At the other end, we've reduced the damping below the current fixed damping level by quite a bit at low speed. Really it was that bandwidth—that is, extending the car's

acceptability and capability in both directions along the performance spectrum—we were after, and that's what you won't find in any competitive ride control system.

**Q: Have you created the world's finest exotic production sports car in the ZR-1?**

A: I don't see Corvette ZR-1 as exotic. I see it as much more. Corvette is identifiable and recognized on the road. Exotic is strange scoops and wings, like the Countach. Exotic is making 300 cars a year and selling them for outrageous prices. That's not Corvette. This car certainly delivers the elements of high-performance driving—all those things that exotic cars do for their owners—at a much more affordable level. In a way, the Corvette ZR-1 is the ultimate expression of the Chevrolet mission statement, which is to "give more than expected." But instead of a \$10,000 car, you're talking about a \$50,000 car that's giving you the attributes of a \$75,000 to \$300,000 car. The Cor-

vette is a civil automobile; it doesn't remind you every minute that you are driving a race car. But it also has this other dimension that is instantly waiting for you.

**Q: What steps are you taking to ensure customer satisfaction with Corvette ZR-1 at the dealer service level?**

A: The Corvette ZR-1 will be available at Chevrolet dealerships offering state-of-the-art service facilities with advanced diagnostic and repair equipment. One of the most important ingredients is the GM-CAMS (Computerized Automotive Maintenance System), an advanced vehicle service system which provides dealerships with the latest ZR-1 technical information available. GM-CAMS assists technicians in diagnosing many vehicle powertrain, brake and suspension components and allows retesting of the vehicle once repairs are completed.

**Q: Subjectively, how does the ZR-1 feel on the open road? Does it sound like a traditional small-block?**

A: It sounds different. It sounds good. We didn't particularly try to achieve one sound or another. We got that sound naturally out of the engine. It's a high-torque chain drive V8 that's quiet and smooth when you're running around at low RPM. And when you run it up to the red line, the car—I will tell you—comes alive.

**Q: It's been said that the current Corvette is an engineer's car. True?**

A: Of course. But it's also a designer's car. I guess the best way I would describe it is that between Jerry Palmer, John Cafaro, the interior people and the engineering team, we've really invented a car for ourselves. It's a car that's the ultimate expression of what we would like to drive around. That's the only way I know to do the Corvette. You can't do it for somebody else. You've got to do it for yourself. Then you literally say to your customers, "We've got this car that we're excited about, and if you'd like to buy one, we'll make you one."



*Every facet of ZR-1 technology, from the LT5 engine to the Selective Ride Control, works in concert to achieve a new level of production-car performance.*



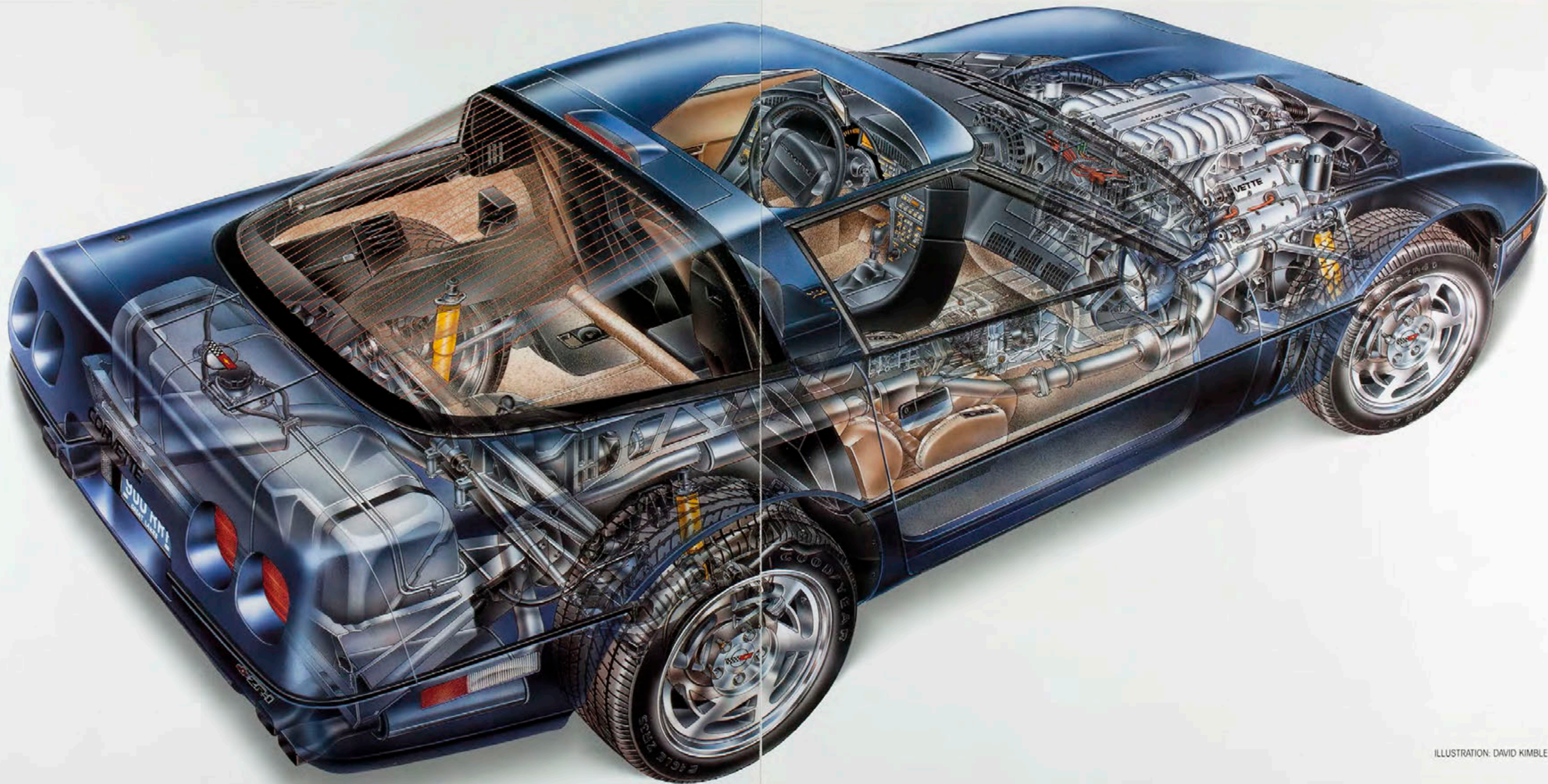


ILLUSTRATION: DAVID KIMBLE

## ZR-1 BY THE NUMBERS

(A Performance Story)

*The leading-edge technology only begins with a 5.7 Liter 32-valve dual-cam V8...*

Test-track data prove that Corvette ZR-1 is one of the fastest production cars available in the world today. Sheer muscle, though, is hardly what ZR-1 is all about. This is a sophisticated grand-touring automobile, serving up the finest combination of performance and luxury ever offered to the American driving enthusiast.

The ZR-1 owner is surrounded by a Delco/Bose stereo sound system, power-adjustable leather sport seats, Comfortilt steering, air conditioning and every other luxury Corvette is known for. But make no mistake, this is a Corvette with a rather exotic heartbeat...

**5.7 LITERS OF ALUMINUM 32-VALVE V8 TECHNOLOGY**  
Beneath the sleek fiberglass hood of Corvette ZR-1 is an art form of breathtaking beauty...the LT5 32-valve 5.7 Liter V8.

There have been masterpieces in engineering before; the great Cadillac V12s and V16s of the 1930s and the 1955 "small-block" Chevy V8 that went on to become the most successful racing engine in history come to mind—but the LT5 is the classic engine of the technology era.

This aluminum V8, exclusive to the Corvette, is a joint engineering effort of Chevrolet Motor Division and GM's Group Lotus engineering center in Hethel, England.

While it is a completely new design, the LT5 pays tribute to traditional Corvette heritage in its displacement (5.7 liters) and cylinder bore spacing (4.40 inches). It shares these dimensions with the Corvette L98 engine, that highly refined development of the classic small-block Chevy V8.

Beyond that, the LT5 is strictly 1990s technology. Features include four valves per cylinder, dual overhead cams (four total) with direct lobe-to-lifter contact, 16 runner inlet manifold, two Multec fuel injectors per cylinder, secondary inlet port throttling, sequential fuel

injection and ultra-high 11.0:1 compression ratio.

The earthshaking result is 375 HP at 5800 RPM; 370 lbs. ft. of torque at 4800 RPM. But horsepower alone doesn't tell all (the big-block Sting Rays of the Sixties had plenty of raw power on tap). It's the low-speed-civility, cruising-speed efficiency\* and high-RPM ferocity that make the LT5 an engineering blueprint for the future.

### MYSTERY OF INDUCTION

A unique multiple-throttle induction system is the secret to LT5

\*EPA estimated 17 MPG City, 26 MPG Highway.

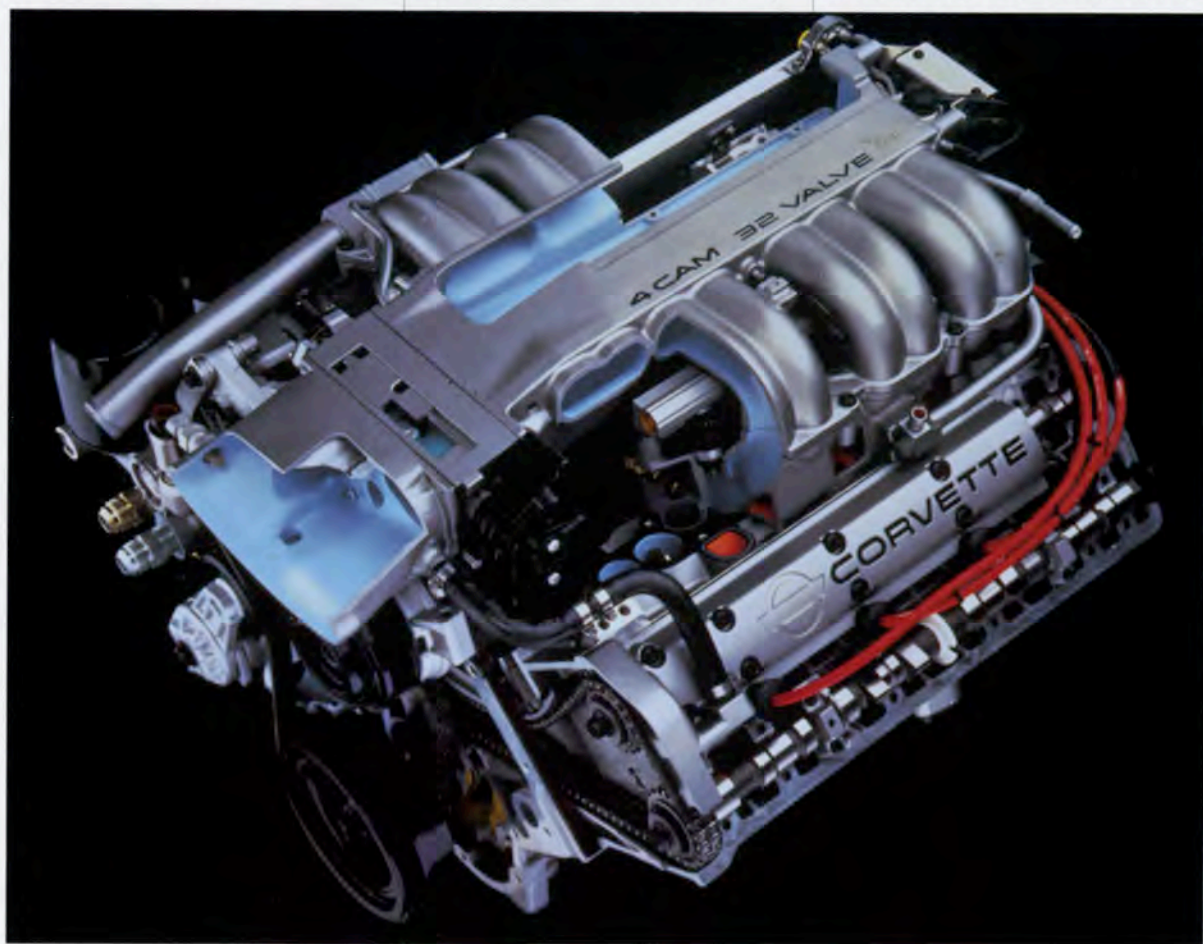
tractability. This three-phase system looks much like Corvette's traditional Tuned-Port Injection but the throttle body has three butterflies instead of two—and there are now 16 runners instead of eight. These runners feed air directly into each of the injector housings, which have an electronically controlled, sequentially fired fuel injector positioned over each of the intake valves.

Within each cylinder, the intake ports, valves and cam lobes are divided into two groups; the primary being the one toward the front of the engine and the secondary to the rear. The secondary

down, there's a complete change in the ZR-1's personality. The secondary port throttle valves open to permit fuel-air mixture to enter the secondary intake valves.

The secondary port throttles open in a similar manner as "secondaries" on a four-barrel carburetor and the eight secondary injectors come on line. At this point things really begin to happen, with the engine now running on all 16 injectors and all 32 valves.

The secondary intake valves, which are now admitting fuel-air mixture to the cylinders, are actuated by cam lobes, which



***A technological tour de force and the heart of Corvette ZR-1: the LT5 32-valve V8 engine. Displacement is a traditional-to-Chevrolet 5.7 liters. Everything else is new. Features include nearly all-aluminum construction, four overhead camshafts with dual cam contours, sixteen runner inlet manifold, two fuel injectors per cylinder, sequential fuel injection and a computer-controlled coil direct-fire ignition.***

ports are slightly larger in diameter and contain a port throttle butterfly which is actuated through a mechanical linkage by a vacuum diaphragm which is signaled by computer.

Below half-throttle, or 3000 RPM, the engine breathes through the primary ports only. So operation, in effect, is on three valves per cylinder. The secondary intake valve is also moving, but admits no fuel-air mixture.

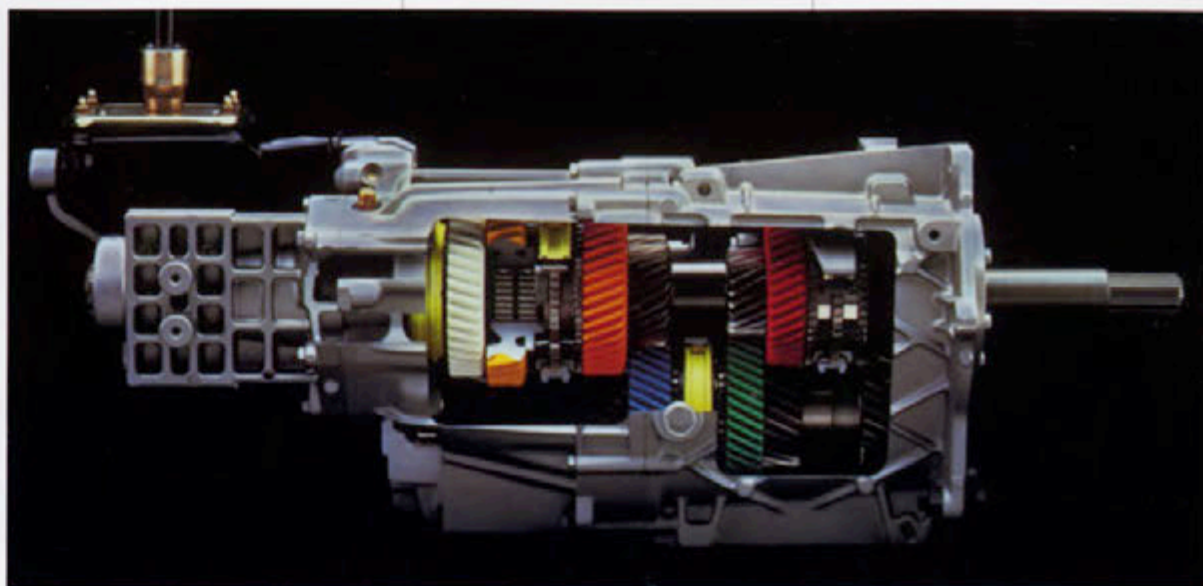
But when you put your foot

have more duration than the "primaries."

The effect is to provide true variable valve timing, optimizing flow and producing both tractable low speed and impressive high speed characteristics in a single engine.

### THE "POWER" SWITCH

Everybody's talking about it—the "power" key switch on the console of your new ZR-1—here's what happens when you use it:



*ZR-1 rides on the widest tires in Corvette history: huge P315/35ZR-17s in back and P275/40ZR-17s up front. These tires necessitate the gently flared rear bodywork.*

*The power key is an exclusive feature of Corvette ZR-1. When "Full" mode is selected, the ZR-1's full potential is unleashed. "Normal" mode limits driver to about 200 HP.*

*The 6-speed manual transmission has been designed specifically for Corvette by Zahnradfabrik Friedshafen (ZF) A.G. of West Germany. ZF is known worldwide for its gearboxes.*

*The all-new-for-1990 Corvette instrument panel features highly readable analog and digital instrumentation. Driver's side Supplemental Inflatable Restraint system (air bag) is standard.*

The keyed switch allows two modes—"normal" and "full" power. When you lock in "normal," the engine is running on primary ports only. This limits output to approximately 200 HP. The "full" mode allows secondary valve operation, in turn allowing maximum 32-valve performance and 375 HP.

As a ZR-1 owner, you (and only you) hold the key to exotic-class performance.

#### IGNITION AND ELECTRONICS

A computer-controlled coil direct-fire ignition is featured. The direct-coil ignition module is comprised of four coils, each with two separate plug leads.

Timing is constantly optimized by the engine computer. A further enhancement is the electronic spark control which minimizes the occasional spark "knock" drivers may hear under acceleration or with lower octane fuel.

#### WHY 32 VALVES?

For starters—better breathing, higher output per cubic inch of displacement and tremendously efficient performance.

It's the twin inlet and twin exhaust valve combinations in each of the eight combustion chambers that make the LT5 a 32-valve V8 engine.

Two camshafts above each bank of cylinders are featured. One camshaft operates the intake valves and the other operates the exhaust valves. The inlet valves have distinct primary and second-



ary cam contours on each inlet camshaft to accommodate the LT5's unique induction system. Each pair of camshafts is driven by a highly durable duplex steel roller chain. The overhead design allows for valve train weight savings and simplification.

#### ZF 6-SPEED MANUAL TRANSMISSION

The Corvette ZR-1 is equipped with the acclaimed ZF 6-speed manual transmission, described by one journalist as bringing Corvette's transmission "back to best."

If a rugged performance transmission ever shifted like the proverbial "hot knife through butter," this is the one. Six speeds forward, fully synchronized.

Not only does this ZF-designed 6-speed help get the most out of the 32-valve V8, it beautifully complements the LT5's two tiers of performance with computer-aided gear selection (guiding you from 1st to 4th during certain light-throttle driving modes) and well-spaced ratios for both maximum performance and low-RPM highway cruising (65 MPH at 1600 RPM).

#### 4-WHEEL INDEPENDENT SUSPENSION

The Corvette ZR-1 wouldn't be one of the world's finest production sports cars without a keenly tuned chassis. These are the components that help deliver up to .91 g of lateral acceleration on the skid pad and over 1.2 g's on the race-track: fiberglass composite front and rear transverse springs with computer-selected spring rates, rear independent suspension with 5-link connections and forged-aluminum pieces, power rack-and-pinion steering, and an aircraft-inspired "uniframe." The standard Performance Handling Package includes heavy-duty front and rear springs and stabilizer bars, heavy-duty four-wheel disc brakes and power steering cooler.

**SELECTIVE RIDE CONTROL** Selective Ride Control, standard on ZR-1, improves on the razor-sharp reflexes of Corvette and offers sedan-like ride quality—when desired.

The driver can select from Touring, Sport or Performance modes via a console-located switch.

Touring mode gives the Corvette driver smoothness and comfort you might not expect to find in a performance coupe.

Sport mode is not unlike Corvette's standard suspension, offering precise handling and well-controlled ride motion.

Performance mode delivers racetrack handling and ride.

Within each mode, there are six different shock absorber damping levels, depending on vehicle speed. Damping levels are automatically adjusted by electric motors. A variable damping feature automatically "firms up" the ride as speed increases.

#### BOSCH ABS II

This is one of the most sophisticated anti-lock braking systems available in a production automobile. ABS helps the driver to retain maneuverability under full braking.

When called upon to do so, the computer-controlled anti-lock system can adjust brake pressure as many as 15 times per second, a rate even the most skilled driver cannot attain.

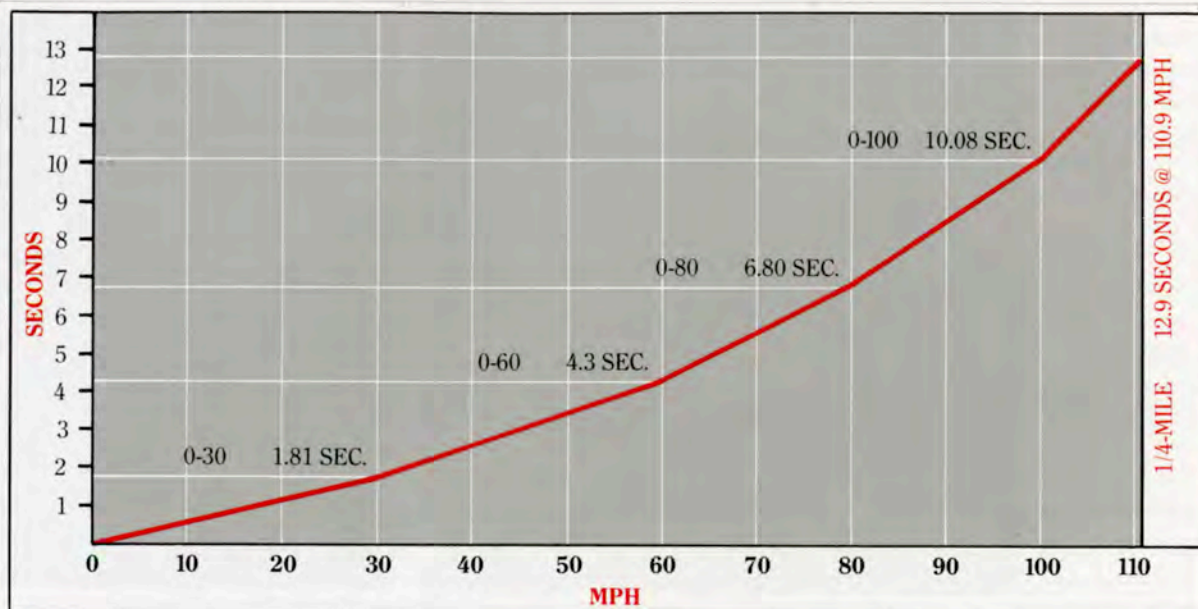
Bosch ABS II is combined with a four-wheel ventilated disc system.

#### NEW GOODYEAR EAGLE PERFORMANCE TIRES

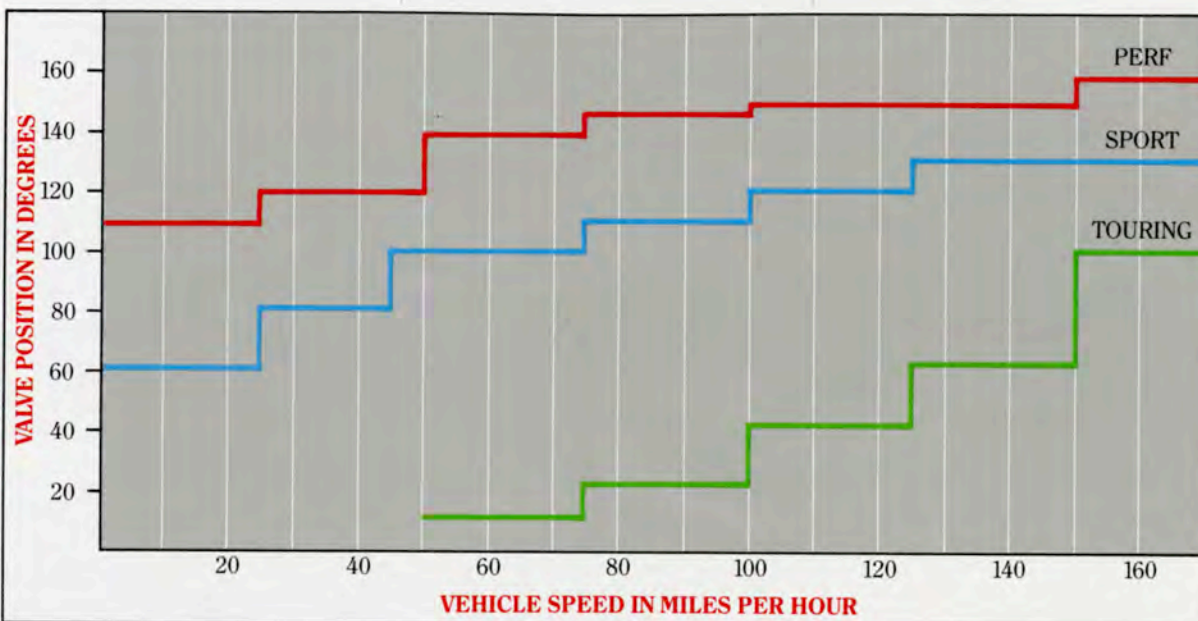
The ZR-1's distinctive appearance results from the use of the widest rear tires ever put on a production sports car. These P315/35ZR-17 Eagle unidirectional (speed rated to 193 MPH) tires were developed specifically by Goodyear for the ZR-1, which required a wider body from the front doors back to accommodate them. The Eagle tires up front are P275/40ZR-17.

A standard low-tire-pressure warning system continuously monitors the air pressure in each tire while the vehicle is being driven.

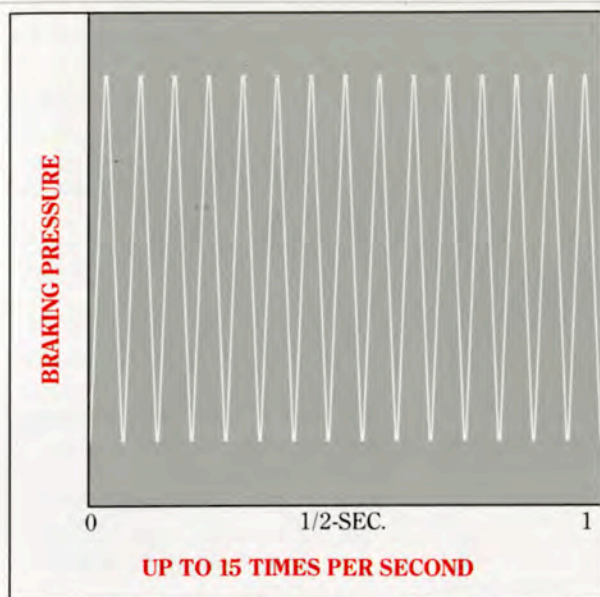
The self-energizing sensors mounted on each wheel detect low pressure conditions and signal a receiver that indicates the condition by turning on a lamp in the driver information center, indicating low tire pressure.



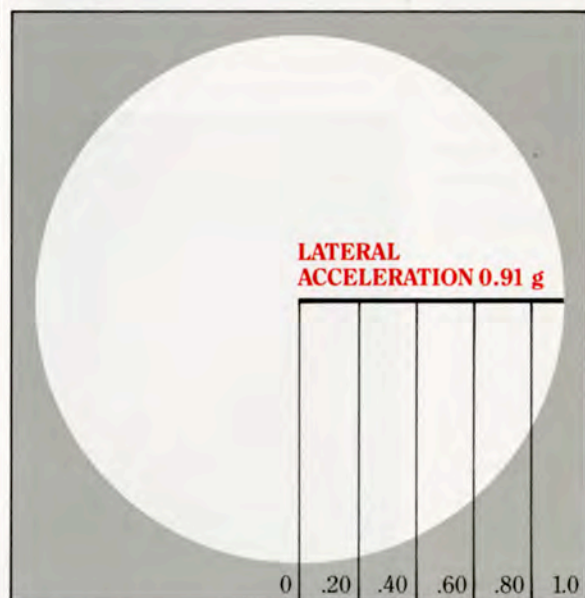
*With up to 375 horsepower on tap, the ZR-1 offers astounding acceleration times like these: 0 to 60 in under five seconds and 0 to 100 in 10.08 on the GM test track using a professional driver.*



*The standard Selective Ride Control allows the driver to select one of three system settings (Touring, Sport or Perf) by rotating a switch on the console panel. Each switch provides six different shock absorber damping levels—depending on vehicle speed.*



*Corvette's Bosch ABS II anti-lock braking system modulates braking pressure up to 15 times per second, providing a level of braking control even the most skilled driver cannot attain. This graph does not portray actual Bosch ABS II operation exactly.*



*The ZR-1 is capable of up to 0.91 g's of lateral acceleration on the skid pad. This cornering power is the result of carefully tuned suspension and tires.*

## TECHNICAL DATA

### ENGINE

Block . . . . . Cast aluminum  
 Pistons . . . . . Cast aluminum  
 Bore x Stroke . . . 99.0 x 93.0mm (3.90 x 3.66 in.)  
 Displacement . . . . . 5.7 Liters (350 cu. in.)  
 Compression Ratio . . . . . 11.0:1  
 Engine Control System . . . . . Computer-controlled coil ignition system with enhanced electronic spark control system.

Emission Controls . . . . . 3-way catalytic converter with feedback fuel-air-ratio control.  
 Valve Train . . . . . DOHC (4 total) with direct lobe to lifter contact. A 32-valve engine utilizing camshaft duplex chain drive.

Power (SAE Net): . . . . . 375 @ 5800 RPM  
 Torque (SAE Net): . . . . . 370 ft. lbs. @ 4800 RPM  
 Valve Diameter

Inlet . . . . . 39.0 x 2mm (1.54 in.)  
 Exhaust . . . . . 35.2 x 2mm (1.38 in.)

CAM Timing (°) . . . . . Pri. Sec.  
 Inlet-BTC . . . . . 12 22  
 ABC . . . . . 60 70  
 Duration . . . . . 252 272  
 Exhaust-BBC . . . . . 60  
 ATC . . . . . 12  
 Duration . . . . . 252

Valve Lift  
 Inlet . . . . . 9.9mm (0.39 in.)  
 Exhaust . . . . . 9.9mm (0.39 in.)  
 Bore Centers . . . . . 111.76mm (440 in.)  
 Fuel System . . . . . Tuned-Port Fuel Injection  
 Throttle Bore  
 Primary . . . . . 22.0mm (0.866 in.)  
 Secondary . . . . . 2 x 59.0mm (2 x 2.32 in.)  
 Recommended Fuel . . . . . Unleaded Premium  
 Fuel Tank Capacity (in gals.) . . . . . 20

### TRANSMISSION

6-speed manual  
 Gear ratios: 1st . . . . . 2.68 5th . . . . . 0.75  
 2nd . . . . . 1.80 6th . . . . . 0.50  
 3rd . . . . . 1.31  
 4th . . . . . 1.00 Reverse . . . . . 2.50  
 Final drive ratio, 3.45:1

### TIRES AND WHEELS—STANDARD

**TIRES**  
 P275/40ZR-17 (front) and P315/35ZR-17 (rear) B/W High-speed steel-belted radial Eagle unidirectional (Goodyear)\*  
**WHEELS** 17" x 9½" front, 17" x 11" rear  
 Type and Material: Left-right specific aluminum alloy road wheels with special vent design.

### SUSPENSION—GENERAL

**SHOCK ABSORBERS** (front and rear)  
**TYPE:** Standard—Gas pressurized with 18-way Selective Ride Control.

### SUSPENSION—FRONT

**TYPE AND DESCRIPTION**  
 Independent, forged aluminum upper and lower control arms and steering knuckle, transverse

monoleaf spring and steel stabilizer, spindle offset. Spring Type and Material: Monoleaf, filament-wound glass-epoxy composite.

### SUSPENSION—REAR

**TYPE AND DESCRIPTION**  
 Independent 5-link design with toe and camber adjustment, forged aluminum control arms, knuckles and struts; transverse monoleaf spring steel tie-rods and stabilizer. Tubular U-jointed drive shafts. Spring Type and Material: Monoleaf, filament-wound glass-epoxy composite.

### BRAKES

**DESCRIPTION**  
 Aluminum caliper with nodular iron reaction bracket; pad reaction through bracket. Self-adjusting.  
**TYPE**

Front: Disc with sliding-head low drag calipers.  
 Rear: Disc with sliding-head low drag calipers.  
 Power Brakes: Standard.  
 Anti-Lock Braking System: Electronic 4-wheel, 3-channel.

### ELECTRICAL—SUPPLY SYSTEM

**BATTERY**  
 Make: Delco Model: 75-630 Voltage: 12 volts  
**ALTERNATOR**  
 Type and Rating: 120 amps

### ELECTRICAL—STARTING SYSTEM

**STARTER MOTOR**  
 Current Drain at 0°F: 350 amps.

### ELECTRICAL—IGNITION SYSTEM

Type: High Energy Ignition. Coil: Integral.  
**SPARK PLUGS**  
 Make: AC Model: FRLS1 Gap: .89mm (0.035 in.)

### BODY

**STRUCTURE**  
 Integral perimeter-frame birdcage forms unitized body structure.  
**ANTI-CORROSION TREATMENT**  
 All-encompassing corrosion protection including extensive use of aluminum; galvanization.

### STEERING

Power: Standard Turning Diameter:  
 Adjustable Steering 40.4 ft.  
 Wheel: (Standard) Steering Type: Hydraulic  
 Black-leather-wrapped rack-and-pinion  
 four-spoke steering Overall Ratio: 15.6:1  
 wheel. Turns, lock-to-lock: 2.25

### FRAME

All-welded steel-body-frame construction, 100% galvanized.

### CAPACITIES/CALCULATED DATA

Engine Oil . . . . . 12 qts. Interior  
 Fuel . . . . . 20 gals. Volume . . . 48.7 cu. ft.  
 Engine Trunk/Cargo  
 Coolant . . . . . 16.7 qts. Volume . . . 17.9 cu. ft.  
 Frontal Area . . 20.4 ft.<sup>2</sup>

\*Tire chains should not be used because they may cause damage to your car.

# Colors, Trim and Features

Corvette ZR-1 offers the same wide selection of interior and exterior colors as other 1990 Corvette models. In addition, ZR-1 features an even more complete level of standard equipment.

## EXTERIOR COLORS

BLACK



STEEL BLUE METALLIC



CHARCOAL METALLIC



POLO GREEN METALLIC



WHITE\*



BRIGHT RED



DARK RED METALLIC



\*Not available at start of production.

## INTERIOR COLORS

STANDARD LEATHER  
SPORT SEAT

Blue	X
Black	X
Gray	X
Red	X
Saddle	X

## INTERIOR/EXTERIOR COLORS

EXTERIOR COLORS	INTERIOR COLORS				
	BLUE	BLACK	GRAY	RED	SADDLE
Black		X	X	X	X
Steel Blue (Met.)		X			
Charcoal (Met.)		X	X		X
Polo Green (Met.)					X
White	X	X	X	X	X
Bright Red		X	X	X	X
Dark Red (Met.)		X			X

## LEATHER SPORT SEAT

Deeply contoured, leather sport seats with full lumbar power adjustment are standard on Corvette ZR-1.





## STANDARD FEATURES

### LEATHER SPORT SEATS

Aggressively contoured leather sport seats include a six-way power adjustment and full-power lumbar adjustment. Available colors: Blue, Black, Gray, Red, Saddle.

### ANTI-THEFT FEATURES

PASS-Key® (Personal Automotive Security System) is a special ignition system utilizing a module with a resistor decoder and an ignition key with a pellet of specified resistance. In addition to PASS-Key, an anti-theft horn alarm circuit and starter interrupt are standard.

### ELECTRONIC SPEED CONTROL

Electronic speed control includes a convenient resume-speed feature and a speed adjustment that allows you to change your speed in precise 1-MPH increments.

### DELCO/BOSE AM/FM STEREO MUSIC SYSTEM WITH DIGITAL COMPACT DISC PLAYER

The Delco/Bose Music System is comprised of a receiver and four bass reflex amplifier/speaker enclosures engineered by placement and equalization to give both driver and passenger the full stereo effect. Each speaker has its own built-in equalizer network.

Other features of the system include: AM/FM stereo reception with automatic adjustment, adjustable speed-controlled loudness, electronic tuning with Seek and Scan, Dynamic Noise Reduction (DNR™) and Dolby® Sound Noise Reduction to reduce high-frequency "hiss" on AM, FM and cassette tape. Also included: tape player with automatic reverse and music search feature, compact disc player, 100 watts of power, separate treble and bass controls, speed compensated volume and integral compact disc player.

### AIR CONDITIONING

Climate control system also includes heater, defroster and side window defoggers. An electric rear window defogger is also standard.

### UNIDIRECTIONAL ZR40 TIRES\*

The largest standard tire/wheel combination ever offered in a production sports car: P275/40ZR-17 Goodyear Eagle unidirectional tires on 17" x 9½" aluminum alloy wheels (front), P315/35ZR-17 Goodyear Eagle unidirectional tires on

17" x 11" aluminum alloy wheels (rear).

### POWER TEAM/CHASSIS/MECHANICAL

- Bosch ABS II anti-lock braking system.
- 6-speed manual transmission.
- Delco Freedom Plus II Battery with sealed side terminals.
- Electric engine cooling fan(2).
- Electric in-tank fuel pump (2).
- Engine oil cooler.
- Exclusive transverse front and rear springs with monoleaf glass-epoxy construction.
- 5.7 Liter DOHC 32-valve V8 engine with Tuned-Port Fuel Injection and all-aluminum construction.
- Forged aluminum front and rear suspension arms.
- Fully independent front and rear suspension.
- Limited-slip differential.
- Aluminum alloy cam covers.
- Power rack-and-pinion steering.
- Power Steering Cooler.
- Selective Ride Control.
- Serpentine-belt engine accessory drive.
- Stainless steel exhaust pipes, catalytic converter exhaust manifolds and free-flow mufflers.
- Uniframe body construction, 100 percent galvanized and dip-painted.

### EXTERIOR

- Concealed wipers with integral washers in wiper arms.
- Corrosion-proof fiberglass panels.
- Designed-in body-side moldings.
- Dual electric remote-controlled heated sport mirrors.
- Dual halogen fog lamps.
- Frameless rear hatch glass with three remote releases.
- Front and rear cornering lamps.
- Full-tilt clamshell hood.
- Retractable halogen headlamps.
- Tinted glass.

### INTERIOR

- Center console with shifter, coin tray, cigarette lighter and ashtray, plus controls for power windows, radio, air conditioning and electric mirrors.
- Day/night rearview mirror with integral map light.
- Delco AM/FM stereo radio with Seek and Scan, cassette tape player, compact disc player, four speakers and digital clock.
- Driver information system providing average MPH and cruising range in digital readouts.
- Electronic liquid-crystal instru-

mentation with analog tachometer and digital speedometer display. Additional readouts include: fuel level, oil pressure, oil temperature, coolant temperature, voltmeter. Conventional readouts for odometer, turn signals and high-beam headlamps.

- Headlamps-on reminder.
- High-intensity interior lamps.
- Illuminated right-hand visor mirror.
- Leather-wrapped steering wheel.
- Power door locks.
- Power windows.
- Supplemental Inflatable Restraint system (air bag).
- Tilt-steering column.

### DIMENSIONS

#### EXTERIOR

- Width: 74.0"
- Front Tread: 59.6"
- Rear Tread: 61.9"
- Wheelbase: 96.2"
- Overall Length: 177.4"
- Height: 46.8"
- Minimum Ground Clearance: 4.9"

#### INTERIOR

- Head Room: 36.4"
- Leg Room: 42.6"
- Shoulder Room: 54.0"
- Hip Room: 49.3"
- Cargo Volume: 17.9 cu. ft.

### OPTIONAL EQUIPMENT

- Electronic air conditioning.
- Transparent roof panel.

\*Tire chains should not be used because they may cause damage to your car.



A Bosch ABS II anti-lock braking system, combined with a powerful power disc at each wheel, gives Corvette the stopping power and control to complement its performance potential.



Corvette ZR-1 features PASS-Key®, the electronic anti-theft system that has proven itself the most effective theft deterrent Chevrolet has ever offered. PASS-Key is a special ignition system utilizing a module with a resistor decoder and an ignition key with a pellet of specified resistance. Vital systems are deactivated when you lock the ignition and can only be reengaged with your special PASS-Key ignition key. An anti-theft horn alarm is also standard on Corvette ZR-1.



The new-for-1990 Supplemental Inflatable Restraint system (air bag) is located in the hub of the steering wheel. The S.I.R. is designed to provide added protection to the driver in the event that your Corvette is involved in a moderate to severe frontal impact. For maximum protection in frontal and all other collisions, both driver and passenger should be properly restrained with safety belts.



The clean look of a modern classic. Four rectangular rear lamps are a ZR-1 signature.

# Additional Information

## IMPORTANT: A WORD ABOUT THIS CATALOG

We have tried to make this catalog as comprehensive and factual as possible. We reserve the right, however, to make changes at any time, without notice, in prices, colors, materials, equipment, specifications, models and availability. Since some information may have been updated since the time of printing, please check with your Chevrolet dealer for complete details.

## A WORD ABOUT ENGINES

Chevrolets are equipped with engines produced by different operating units of GM, its subsidiaries or suppliers to GM worldwide.

## A WORD ABOUT ASSEMBLY

Chevrolets are assembled by different operating units of General Motors, its subsidiaries or suppliers to GM worldwide. Chevrolets incorporate thousands of components produced by different operating units of GM, its subsidiaries or suppliers to GM worldwide. We sometimes find it necessary to produce Chevrolets with different or differently sourced components than originally scheduled. All such components have been approved for use in Chevrolets and will provide the quality performance associated with the Chevrolet name. Since some options may be unavailable when your vehicle is assembled, we suggest that you verify that your vehicle includes the equipment you ordered, or if there are changes, that they are acceptable to you.

## A WORD ABOUT UPDATED SERVICE INFORMATION

Chevrolet regularly sends its dealers useful service bulletins about Chevrolet products. Chevrolet monitors product performance in the field. We then prepare bulletins for servicing our products better. Now you can get these bulletins, too. Ask your dealer. To get ordering information, call toll free 1-800-551-4123.

## A WORD ABOUT CORROSION PROTECTION

Chevrolets are designed and built to resist corrosion. All body sheet metal components are warranted against rust-through corrosion for 6-years/100,000 miles. Application of additional rust inhibiting materials is not required under the corrosion coverage.

## SAFETY FEATURES: OCCUPANT PROTECTION

• Supplemental Inflatable Restraint system, driver only, with manual lap/shoulder safety belts for the driver and right front passenger • Energy-absorbing steering column • Energy-absorbing instrument panel • Interlocking door latches • Side-

guard door beam • Passenger-guard inside door lock handles • Safety armrests • Head restraints, driver and right front passenger • Break-away inside rearview mirrors • Security door locks and door retention components

## ACCIDENT AVOIDANCE

• Side marker lights and reflectors • Parking lamps that illuminate with headlamps • Four-way hazard warning flasher • Back-up lights • Center high-mounted stop lamp • Directional signal control with lane-change feature • Windshield defroster, washer and multi-speed wipers (pulse-type) • Inside rearview mirror • Dual electric remote outside rearview mirrors • Brake system with dual master cylinder and warning light • Starter safety switch • Low-glare finish on inside windshield moldings, wiper arms and blades, metallic steering wheel surfaces • Illuminated heater and defroster controls • Illuminated windshield wiper and washer controls • Tires with built-in tread-wear indicators


## THEFT DETERRENCE

• Audible reminder for ignition key removal • Theft-deterrent steering column lock • Visible vehicle identification number • PASS-Key Anti-Theft System • Audio alarm system with starter-interrupt feature • Locking roof panel with theft-deterrent mount (Corvette Coupe only) • Theft-deterrent wheel lugs



GM's 3-year/50,000-mile limited warranty covers repairs for the 1990 Corvette including labor and parts, to correct any defects in material or workmanship occurring during the warranty period. After the first year or 12,000 miles, there is a \$100 deductible per repair visit. Warranty features include air conditioning repair, towing, no-cost warranty transfer, 6-year/100,000-mile body sheet rust-through protection and 5-year/50,000-mile emission control system coverage. Items not covered include tires (which are covered by their manufacturer) and normal maintenance. See your Chevrolet dealer for terms of this limited warranty.

At your Chevrolet dealer's, financing or leasing your new Corvette can be as easy as saying GMAC.

Let's get it  
together...  
buckle up. 

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4975 July 1989

The  
**Heartbeat**  
of America.



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