CORVETTE

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1994 Corvette Overview

ELKHART LAKE, WI—The Corvette turns 40 today, but the fun never stops. The milestone one-millionth Corvette rolled off the assembly line on July 2, 1992. Now a refined LT1 engine, an all-new interior, improvements in comfort, and added safety features are driving the Corvette toward its second million.

The 5.7-liter LT1 small-block V8 is even more satisfying to drive in 1994 with the introduction of sequential fuel injection. Sequential fuel injection optimizes combustion by precisely matching fuel delivery to each cylinder's intake stroke, firing the individual injectors in sequence with the LT1's firing order. This sophisticated system provides a smoother idle, better driveability, and lower emissions. The second-generation LT1's new SFI system incorporates a mass airflow sensor (MAF) in place of the speed-density system used on previous LT1 engines.

GM's highly regarded 4L60-E 4-speed automatic overdrive transmission is standard equipment on LT1-powered coupes and convertibles in 1994. The 4L60-E combines the durable and reliable design of the 4L60 with the precision and flexibility of electronic controls. The Corvette's Powertrain Control Module acts as an interface between the engine and transmission to provide the feel of a "seamless" powertrain.

The Corvette interior is completely redesigned for 1994, with new carpeting, new door trim panels, new seats, a new two-spoke steering wheel, and a new look for the instrument panel and console. The standard reclining bucket seats and optional articulated Sport seats both have leather seating areas exclusively. The new seats are designed for easier entry and exit.

The 1994 Corvette interior features include a passenger's side air bag and knee bolster as standard equipment. The door panels have storage space in the armrests, and the driver's window has an "Express Down" feature. The instrument panel's white graphics turn to tangerine at night.

Corvette engineers have improved the 1994 model's ride quality by reducing the recommended tire pressure for Corvette coupes to 30psi and lowering the spring rates used with the optional Selective Ride Control system. Shock rates have also been recalibrated.

ZR-1 coupes are outfitted with new five-spoke non-directional aluminum wheels (17 x 9.5 front, 17 x 11 rear) in 1994. Corvette convertibles have a bright outlook in 1994 with the introduction of a heated glass backlight.

Two new exterior colors are available: Admiral Blue and Copper metallic.

The Corvette has long been a showcase for GM's leading-edge technology. Its sophisticated systems include Passive Keyless Entry System (PKE), PASS-Key theft-deterrent system, and Bosch ABS/ASR anti-lock braking and traction control strategy. Chevrolet's all-weather Corvette has a lengthy list of standard equipment including the 300hp 5.7-liter V8 and 4-speed automatic overdrive transmission (the ZF 6-speed manual is a no-cost option), dual air bags, 4-wheel independent suspension, 4-wheel ABS, disc brakes, power windows and door locks, dual electric outside rearview mirrors, cruise control, a heated rear window defogger, an AM/FM stereo with seek, scan and cassette, 17-inch aluminum wheels and high-performance Goodyear Eagle GS-C tires.

The Corvette competes in the high sport market segment against the Nissan 300ZX, Mitsubishi 3000GT, Porsche 968 and 944, Toyota Supra, and the Mazda RX-7. Corvette owners are predominantly male and cite the car's exterior styling and driving pleasure as top reasons for purchase. All Corvettes are manufactured at the GM facility in Bowling Green, Kentucky.

Models	Coupe	Convertible	ZR-1 Coupe
Model Number	1YY07	1YY67	1YZ07
Base Price	Not Available	Not Available	Not Available
Passengers	2	Same as Coupe	Same as Coupe
Class	Mini Compact	Same as Coupe	Same as Coupe
Assembly Plant	Bowling Green, KY	Same as Coupe	Same as Coupe
Primary Structure	Welded Steel Uniframe (100% Galvanized)	Same as Coupe	Same as Coupe
Body Material	Fiberglass-Reinforced Plastic (SMC)	Same as Coupe	Same as Coupe

The Corvette isn't just an automobile—it's an American institution. More Corvettes have been built than any other single sports car in automotive history. More than half are estimated to be still on the road.

The first production Corvette rolled off a short assembly line in Flint, Michigan, on June 30, 1953. The one-millionth unit of America's premier production sports car—a white 1992 convertible—was built on July 2, 1992 at the Corvette Assembly Plant in Bowling Green, KY.

Two Corvette body styles are available: coupe and convertible. The ZR-1 "ultimate performance option" is available only on coupes. The ZR-1 option includes a 5.7-liter DOHC LT5 engine, special bodywork, wider wheels and tires, larger front disc brakes, a selective ride and control system, a low tire pressure warning system, and Delco/Bose stereo/cassette/compact disc player. Everything on the Corvette option list—except a transparent roof panel—is standard equipment on the ZR-1.

The 1994 announcement date is September 1, 1993.

Calendar-Year Sales History And Product Milestones		
	1984	30,424
	1985	37,956
	1986	33,027
	1987	25,437
	1988	23,281
	1989	23,928
	1990	22,690
	1991	17,472
	1992	19,819
	1993	7,454 (through 5/10/93)

The Corvette competes in the high sport market segment against the Nissan 300ZX, Mitsubishi 3000GT, Porsche 968 and 944, Toyota Supra, and the Mazda RX-7. The ZR-1 option coupe—introduced in the fall of 1989 as a '90 model—competes against the Acura NSX, Porsche 911 and 928, Lamborghini, Ferrari, and Lotus.

The positive reception to the Corvette's second-generation LT1 engine, sophisticated ASR traction control strategy, enhanced comfort features, and suspension refinements—coupled with the excitement surrounding

the Corvette's 40th anniversary—have sent Corvette sales upward. The Bowling Green manufacturing plant has been working two shifts recently to meet the demand.

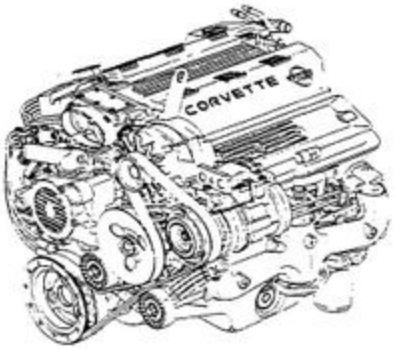
Product Milestones (by model year)

Introduced 1953

- 1957—Factory-installed fuel injection
- 1963—Split-window coupe debuts
- 1965—Disc Brakes introduced
- 1968—Major restyling with removable roof panels and pop-up headlamps
- 1970—LT-1 engine option available
- 1971—First optional ZR-1 package available
- 1975—Convertible dropped from lineup; catalytic converter added
- 1978—Fastback body style introduced
- 1982—First hatchback debuts; Crossfire Injection system introduced
- 1984—All-new coupe introduced
- 1985—5.7L Tuned Port Injected V8 engine debuts
- 1986—Convertible returns to lineup; ABS system and PASS-Key anti-theft system introduced
- 1988—17-inch wheels and tires added as optional equipment
- 1989—ZF 6-speed manual transmission and Selective Ride Control added
- 1990—New interior; driver's-side air bag added; ZR-1 option introduced with 375hp V8; convertible hardtop returns
- 1991—Convex rear fascia added to all models
- 1992—Second-generation 300hp 5.7-liter V8 (RPO LT1) and Bosch ABS/ASR combination ABS and traction control strategy debut; 1,000,000th Corvette produced
- 1993—ZR-1 output increased to 405hp; Passive Keyless Entry introduced; 40th anniversary model

Specifications & Dimensions	Coupe	Convertible	ZR-1 Coupe
■ EXTERIOR			
Wheelbase (in.)	96.2	Same as Coupe	Same as Coupe
Overall Length (in.)	178.5	Same as Coupe	Same as Coupe
Overall Height (in.)	46.3	47.3	Same as Coupe
Overall Width (in.)	70.7	Same as Coupe	73.1
Min. Ground Clearance (in.)	4.2	Same as Coupe	Same as Coupe
Curb Weight (Std.)(lbs.)	3317	3358	3503
■ INTERIOR			
Head Room (in.)	36.5	37.0	Same as Coupe
Leg Room (in.)	42.0	Same as Coupe	Same as Coupe
Shoulder Room (in.)	53.9	Same as Coupe	Same as Coupe
Hip Room (in.)	50.8	Same as Coupe	Same as Coupe
Trunk/Cargo Volume (cu. ft.)	12.6	6.6	Same as Coupe

Engine Specifications	LT1	LT5
Type	OHV V8	DOHC V8
Block Material	Cast Iron	Cast Aluminum
Cylinder Head Material	Aluminum	Aluminum
Bore X Stroke (in./mm.)	4.0 X 3.48/101.6 X 88.4	3.90 X 3.66/99 X 93
Displacement (cu. in./cc)	350/5734	350/5727
Compression Ratio	10.5:1	11.0:1
Induction System	SFI	SFI
Valves/Cylinder	2	4
Lifters	Hydraulic	Hydraulic
Cam Drive	Chain	Chain
Horsepower @ rpm (SAE net)	300 @ 5000	405 @ 5800
Torque @ rpm (SAE net)	340 @ 3600	385 @ 5200
Redline (rpm)	5700	7000
Recommended Fuel (Minimum)	91 Octane	91 Octane



5.7-Liter SFI V8 (LT1)

NEW 94 America's favorite small-block V8 is even better in 1994 with the introduction of sequential fuel injection. A new Powertrain Control Module (PCM) has the capacity to control the individual fuel injectors, the optical ignition system, and the 4L60-E automatic transmission.

Sequential fuel injection optimizes combustion by precisely matching fuel delivery to each cylinder's intake stroke. SFI fires the injectors individually in sequence with the LT1's 1-8-4-3-6-5-7-2 firing order. Sequential injection provides a smoother idle, better driveability, and lower emissions.

The LT1's new SFI system incorporates a **mass airflow sensor** (MAF); previous LT1 engines (1992-93) used a speed-density system. The mass airflow sensor provides accurate information on the amount of air entering the engine, which the Powertrain Control Module uses to determine the fuel requirement.

> "The addition of sequential fuel injection in 1994 greatly enhances the proven design of the 5.7-liter engine. Customers will see notable improvements in driveability and response."
>
> Dan Hancock, Chief Engineer
> 4.3/5.0/5.7L Engines

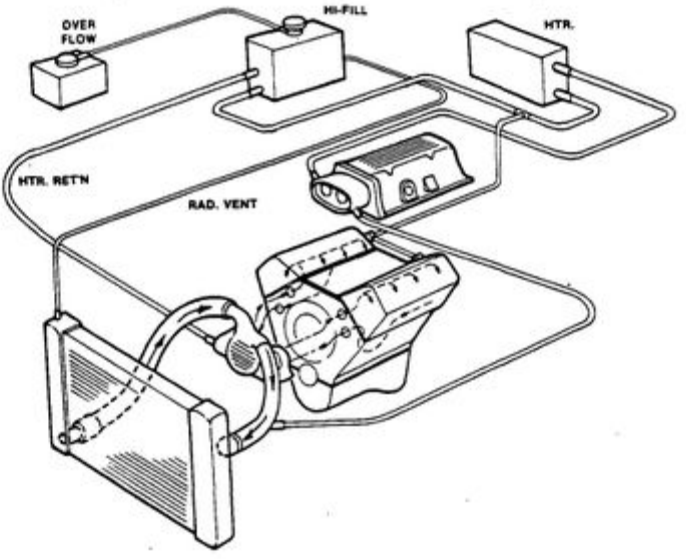
A new, more powerful ignition system provides outstanding cold-start performance under severe conditions. Even at temperatures as cold as 20 degrees below zero, the LT1 starts quickly.

These changes build on the improvements made in the 1993 model year. A camshaft profile with shorter intake valve duration pumped up the LT1's torque by 10 lb.-ft. to 340 lb.-ft. at 3600 rpm. The new cam design, coupled with composite rocker covers, also reduced valvetrain noise.

Introduced in the 1992 model year, the 5.7-liter LT1 V8 packs impressive performance and responsiveness into an efficient package. This second-generation Chevy small-block delivers 300 horsepower at 5000 rpm—the highest net horsepower from a production-car small-block in Chevy history. The LT1's operating range extends hundreds of rpm beyond most OHV engines, giving the LT1 the low-speed punch of a traditional pushrod engine and the high-speed performance of an OHC design. This "best of both worlds" character makes the LT1 an ideal powerplant for the high-performance Corvette.

Horsepower is not the LT1's only strength, however. Its creators sought to design an engine with "balanced excellence"—a powerplant that combined outstanding efficiency, emissions compliance, durability, and performance. The LT1 equals or exceeds world-class V8 engine standards for mass, size, fuel consumption, emissions and cold-start.

> "The LT1's design integrity is evidenced by the outstanding customer response we have had since its introduction. The LT1 was a radical re-design of our 350ci V8. The customer's vote is in. The LT1 is a success."
>
> Dan Hancock, Chief Engineer
> 4.3/5.0/5.7L Engines



Reverse Flow Cooling

The cooling system is one of the most significant features of the LT1. Key components include an innovative gear-driven coolant pump with cast internal cross-over passages, an inlet-side thermostat and pressurized high-fill reservoir.

Unlike many conventional systems that send cold coolant directly from the water pump through the block and then up to the cylinder heads, the LT1 employs a reverse flow strategy that routes it to the heads first. After the heads are sufficiently cooled, vapors—if any—are vented off, and the coolant circulates through the cylinder case.

After the coolant exits the engine block, it is returned to the pump where it travels through a cast internal passage to the radiator. To reduce thermal shock, a thermostat located on the inlet side of the pump controls the temperature of the coolant as it flows from the radiator and attempts to reenter the pump casting.

The coolant pump is the heart of the cooling system. Its cast internal passages route coolant through the engine without sending it through the intake manifold, eliminating potential leaks. The gear-driven pump ensures coolant flow even if the accessory drive belt fails. The gear drive eliminates side-load stresses on the pump bearing, improving its reliability.

Benefits of the LT1's reverse flow cooling include an overall reduction in the amount of pressure in the system and the elimination of pitting or cavitation erosion of the pump and seal. Heat transfer in the engine and radiator is also more efficient. Eliminating the coolant crossover made possible the design of a low-profile inlet manifold, which resulted in a shorter engine profile.

Routing the coolant to the heads first contributes to higher bore temperatures and reduced ring bore friction. This process also assures adequate cooling around the valve seats and spark plug bosses. Strategically located bleed valves allow an air-free fill during service, eliminating the need for multiple thermal cycling.

Computer-Controlled Ignition Timing

To provide optimum spark control with no audible detonation, a sophisticated dual-electronic spark control system is employed. Named "Opti-Spark" after its optical position sensor, the angle-based system "hears" detonation on each engine bank and immediately trims spark advance. The system also has a learning algorithm that adjusts spark advance during low octane fuel use and saves information in its non-volatile memory between engine starts. Compared to a time-based ignition system, Opti-Spark has fewer parts and is more precise and efficient. It eliminates the traditional distributor ignition entirely.

Induction System

Key components of the LT1 induction system include a low-restriction intake and air filtration system and an induction resonator. The combination is designed to let the engine breathe better—essential for its hefty power output—without compromising federal noise regulations.

The LT1's cylinder head porting—coupled with a weight-saving, one-piece intake system—improve airflow into the combustion chamber for cleaner, more controlled burning. A small bypass passage in the throttle body septum permits idle air to move through it, inhibiting throttle bore coking.

Exhaust & Emission Control

The LT1's emission control system includes three heated oxygen sensors, two high-efficiency catalysts and an electric air injection pump. Placing a catalytic converter and an oxygen sensor on each engine bank allows greater control of the fuel-air mixture and spark timing for improved engine performance. The catalysts are close-coupled and located in the engine compartment which improves light-off and conversion efficiency. The low- restriction, three-way converters reduce back pressure, which promotes higher engine power.

The electric air injection pump sends air into the exhaust manifolds during cold starts for enhanced hydrocarbon conversion. The process of injecting air only when required (i.e. before the catalysts reach operating temperature) permits air treatment without the continuous parasitic loss associated with a mechanical air pump.

Fuel Economy

The LT1's advanced technology in the areas of cooling, air flow, internal friction, combustion process and exhaust restriction contribute to the fuel-efficiency of the Corvette. Preliminary EPA estimates of the city and highway mileage figures for 1994 are unchanged at 17 and 25 mpg, respectively.

Accessory Drive System

All of the LT1's accessories are mounted on the left side of the engine by a single cast-aluminum bracket. The single bracket design reduces unnecessary variation in the location of components on the belt track, and reduces accessory vibration.

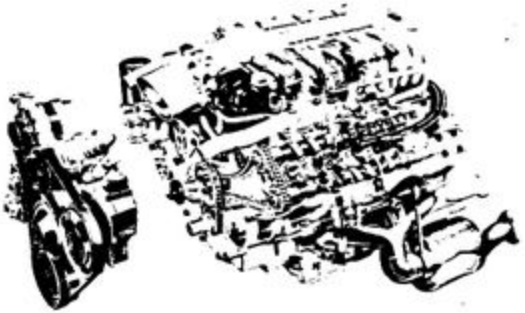
A single-sided serpentine belt assures maximum contact with all drive components. The entire system has been specifically tuned to keep the natural frequency of the accessory system outside the engine's normal frequency for smooth, quiet operation.

Cylinder Block

The cast iron LT1 cylinder block's bottom end is bolstered by four-bolt main bearing caps on the three center bearings.

Synthetic Lubrication

Corvette LT1 engines are filled at that factory with synthetic 5W-30 Mobil 1 engine oil that eliminates the need for a separate heavy-duty engine oil cooler.



5.7-Liter DOHC V8 (LT5)

After a 30-horsepower increase in the LT5's output in 1993, Corvette engineers are giving performance enthusiasts a chance to catch their collective breath in 1994. The sophisticated LT5—exclusive to ZR-1- equipped coupes—is unchanged for 1994. After all, with 405 hp at 5800 rpm and 385 lb.-ft. of torque at 5200 rpm, the ZR-1's performance level is already stratospheric.

The LT5's lofty performance level was achieved through improvements to the cylinder head and valvetrain—or, in hot rod terms, through porting and polishing. The changes included blending the valve heads and creating three-angle intake valve inserts. A sleeve spacer maintains port alignment of the injector manifold.

Other previous enhancements to the LT5 have included four-bolt main bearing caps, a switch to synthetic Mobil 1 oil, platinum- tipped spark plugs (to minimize temperature, chemical and electrical erosion) and an electrical, linear exhaust gas recirculation (EGR) system (to reduce nitrous oxide—NOx—emissions).

ZR-1s retain the unique Power Key feature located on the instrument panel just below the radio controls. The driver has a choice between two engine settings—"FULL" or "NORMAL." Selecting the "FULL" mode

unleashes the engine's entire 405 horsepower capability. The "NORMAL" mode limits the driver to approximately 210 horsepower.

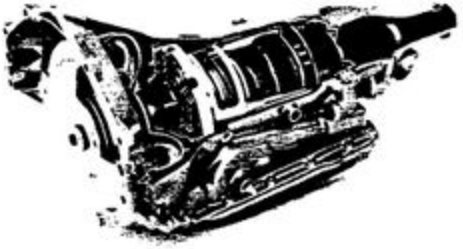
Highlights of the LT5 engine include:

- Fast-burn cloverleaf combustion chambers with centrally located spark plugs for smooth, efficient operation
- Four valves per cylinder (32 total) for optimum induction and exhaust breathing
- High-speed, dual-spring, direct-acting valve train
- Dual-overhead camshafts (four total) with direct lobe-to-lifter contact
- Camshaft-duplex chain drive for durable, reliable operation and compact sprocket design
- Three-valve, high-flow throttle body
- Sixteen-runner inlet manifold tuned to the power peak
- Secondary-inlet port throttling for optimum high speed performance and low speed driving
- Two Multec fuel injectors per cylinder—each intake port has an injector for the best fuel delivery range
- Sequential fuel injection system with camshaft sensor
- Direct-fire ignition system with crankshaft sensor with electronic spark control—improved accuracy, durability and reliability
- Center-oiled, forged-steel crankshaft for strength and durability
- Thermostatically controlled oil cooler
- High-capacity cooling system with the high-flow water pump
- Gerotor oil pump for simple and efficient operation and more consistent oil pressure characteristics
- Single-belt accessory drive with tensioner for improved belt life, proper loading of accessory bearings and reduced maintenance
- Remote, electric air-injection-reaction (AIR) pump that operates only when needed for engine warm-up to reduce parasitic losses
- A two-piece converter and exhaust runner assembly for service accessibility

Designed and developed by General Motors' Group Lotus Division in Hethal, England, and manufactured under contract by the Brunswick Division of Mercury Marine Power in Stillwater, Oklahoma, the LT5 made its public debut in the fall of 1989 on the 1990 Corvette ZR-1 coupe.

Transmission Gear Ratios	Coupe & Convertible		ZR-1 Coupe
	Std. 4-Speed Automatic W/ Torque Converter	Opt. 6-Speed Manual	Std. 6-Speed Manual
1st	3.06	2.68	2.68
2nd	1.63	1.80	1.80
3rd	1.00	1.31	1.31
4th	0.70	1.00	1.00
5th	—	0.75	0.75
6th	—	0.50	0.50
Reverse	2.29	2.50	2.50

Axle Ratios	Coupe & Convertible		ZR-1 Coupe
	Std. 4-Speed Automatic W/ Torque Converter	Opt. 6-Speed Manual	Std. 6-Speed Manual
Available	2.59/3.07	3.45	3.45



4L60-E 4-Speed Electronic Automatic Transmission

NEW 94 The highly regarded 4L60-E 4-speed automatic overdrive transmission is standard equipment on LT1-powered coupes and convertibles in 1994. The electronically controlled 4L60-E replaces the 4L60 4-speed used previously.

The 4L60-E combines the durable and reliable design of the 4L60 with the precision and flexibility of electronic controls. Shift points and shift smoothness are controlled by four solenoids that are connected to the Powertrain Control Module (PCM). The PCM acts as an interface between the engine and transmission to

provide the feel of a "seamless" powertrain. The PCM monitors engine and transmission performance several times a second to ensure smooth gear changes and proper shift points.

NEW 94 **Altitude compensation** is a new feature of the 4L60-E. Changes in altitude or barometric pressure can affect the power output of the engine, resulting in a corresponding change in the shift feel—for example, firmer shifts at higher altitudes. Through the PCM, the 4L60-E shares information on barometric pressure with the engine, and therefore can compensate to maintain a more consistent shift feel even with significant changes in altitude.

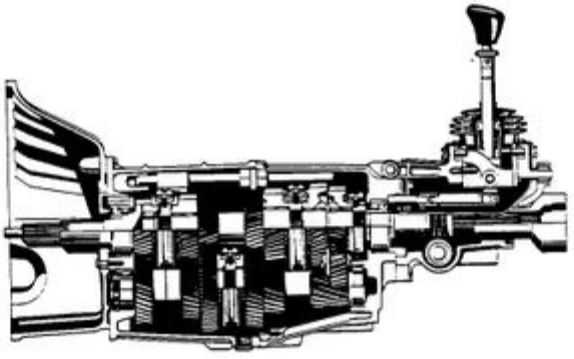
> "With built-in altitude compensation, the PCM selects a transmission shift pattern that will complement the performance of the engine. Essentially, the altitude compensation ability of the Hydra-matic 4L60-E is an aid to the overall operation of the entire powertrain."
>
> Phil Yuhasz, Program Manager
> 4L60-E Transmission

The 4L60-E's wide gear ratio spread enhances both performance and fuel economy. The 3.06:1 first gear ratio provides high torque multiplication for initial acceleration. The overdrive .70:1 gear ratio in fourth gear provides economical highway cruising.

> "The Hydra-matic 4L60-E was designed to provide strong torque, smooth gear shifting, and fuel-efficient operation. We meet all of these characteristics through the marriage of full electronic controls and one of the industry's widest gear ratio ranges available."
>
> Phil Yuhasz, Program Manager
> 4L60-E Transmission

The 1994 4L60-E is seven pounds lighter than its non-electronic 4L60 predecessor. This weight reduction was achieved by replacing the cast iron valve body with a lighter aluminum version.

NEW 94 **A brake-transmission shift interlock** is standard on models equipped with the 4L60-E automatic transmission. To shift from "Park," the brake pedal must be depressed.



6-Speed Manual Transmission

A ZF 6-speed manual transmission is standard on ZR-1-equipped coupes and a no-cost option on the LT1-equipped coupe and convertible. First introduced on the 1989 coupe, the 6-speed system was designed specifically for the Corvette by Zahradfabrik Friedshafen A.G. (ZF), a German transmission builder known worldwide for its gearboxes. It became an unrestricted option on both the coupe and convertible in the 1990 model year.

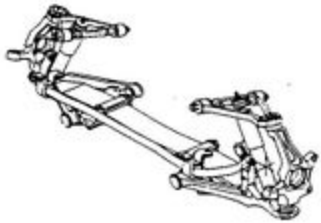
A significant feature of the 6-speed its Computer-Aided Gear Selection (CAGS). The CAGS system is designed to improve fuel economy during normal driving situations by directing the driver from first gear to fourth gear when accelerating lightly from a dead stop. A rapid acceleration cancels the one-to-four shift automatically.

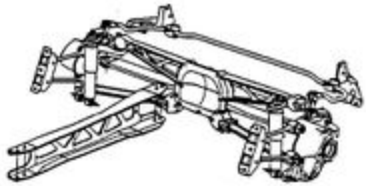
Rear Axle Ratios

NEW 94 A 3.07:1 **rear axle ratio** (RPO G44) is available on all automatic-equipped Corvettes in 1994. In previous years, this performance axle ratio was a restricted option.

The 2.79:1 axle ratio option has been discontinued.

Suspension	Coupe & Convertible	ZR-1 Coupe
Front	Independent Aluminum Parallel Short & Long Arm & Steering Knuckle, Transverse Monoleaf Spring and Steel Anti-Roll Bar	Same as Coupe & Convertible
Rear	Independent 5-Link W/ Transverse Monoleaf Spring, Steel Tie Rods & Anti-Roll Bar	Same as Coupe & Convertible





All Corvettes have a four-wheel independent front and rear suspension. The front is comprised of parallel forged-aluminum upper and lower control arms and steering knuckle, glass-epoxy transverse monoleaf spring and a steel anti-roll bar.

The rear is an independent five-link design with toe and camber adjustment, forged-aluminum control arms, knuckles and struts; a transverse glass-epoxy monoleaf spring, steel tie rods, a steel anti-roll bar and tubular U-joint drive shafts.

The high-performance suspension option (RPO Z07) is intended for showroom stock and gymkhana competition. Originally introduced as an option on the 1991 model, Z07 is a combination of the selective ride control system (RPO FX3) and the former Z51 performance handling package. A standard Corvette outfitted in the Z07 option includes stiffer springs and shocks, a solid 30mm anti-roll bar up front, a solid 24mm rear anti-roll bar, higher rate bushings, heavy-duty brakes, engine oil cooler and the special calibration of the Selective Ride Control system.

Selective Ride Control

NEW 94 Selective Ride Control (SRC) is optional equipment on the coupe and convertible and standard on ZR-1-equipped coupes. The system gives the driver a choice of three suspension settings—"TOUR", "SPORT" and "PERF" (performance).

Spring rates for the SRC system have been lowered in 1994 to improve the ride quality. The new front spring rate is 60 N/mm, and the revised rear spring rate is 26 N/mm.

Components of the SRC system include four shock absorbers (one at each wheel) with built-in actuators and double-digressive shock valving (for additional low frequency damping and ride quality), an electronic processor and the cockpit-operated control switch.

The SRC shock absorbers use the latest high-pressure gas technology to provide consistent, fade-free performance. They utilize large diameter pistons that produce high damping forces. The chief difference between the SRC shock absorbers and conventional units is the design of the damping rod, which can be rotated a maximum of 80 degrees. This produces differing damping rates, resulting in different ride qualities.

An electrically powered actuator assembly is mounted at the top of each shock absorber. These actuators rotate the shock absorber damping rods in response to electrical signals from the system processor. This action adjusts the damping characteristics by varying the oil flow through the bypass orifice.

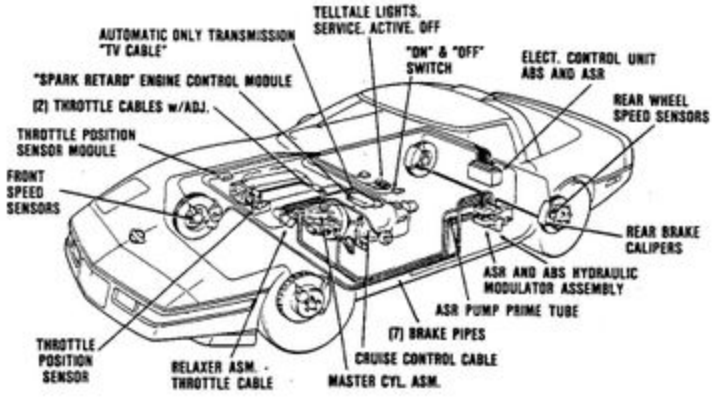
The processor "reads" the vehicle speed as well as the switch setting and adjusts the position of the damper actuators accordingly—reacting about every tenth of a second. The processor adjusts the dampers during both the compression and rebound stages. Other systems adjust only during the rebound.

Steering	Coupe & Convertible	ZR-1 Coupe
Type	Power Rack and Pinion	Same as Coupe & Convertible
Steering Ratio	15.7:1	15.6:1
Turns, Lock-to-lock	2.32	Same as Coupe & Convertible
Turning Diameter, Curb-to-Curb (ft)	40	Same as Coupe & Convertible

Power rack-and-pinion steering is standard on all Corvettes.

Brakes	Coupe & Convertible	ZR-1 Coupe
Type	4-Wheel Power Disc W/ Bosch ABS/ASR	Same as Coupe & Convertible
Front Size (Disc) (in.)	12 X 0.79	13 X 1.1
Rear Size (Disc) (in.)	12 X 0.79	Same as Coupe & Convertible
Total Swept Area (sq. in.)	193	211

Four-wheel power disc brakes with Bosch ABS/ASR—a unique combination of anti-lock brakes and the Acceleration Slip Regulation (ASR) traction control strategy—are standard on all Corvettes again in 1994.



Acceleration Slip Regulation (ASR)

Introduced as standard equipment on the 1992 Corvette, ASR is a sophisticated traction control strategy that works with the ABS to provide improved acceleration and enhanced vehicle stability for all-weather performance. Created by Bosch and developed in cooperation with Corvette engineers, the system contributes to a confident, well-balanced driving experience and outstanding performance—12 months a year.

Background

The advent of the anti-lock brake system (ABS) on the 1986 Corvette made significant improvements in vehicle stability and steering capability during hard braking situations. It also set performance and safety standards in motion for future Chevrolet passenger cars.

In 1990, Bosch ABS IIS added a linear-readout lateral accelerometer to the sophisticated control strategies already programmed in the Corvette's ABS computer. The new combination enabled engineers to enhance vehicle stability during braking situations in turns above 0.6g lateral—even before reaching ABS threshold control.

ASR Highlights:

- ASR is a dual-mode system—it is automatically engaged when the vehicle is turned on, but can be disengaged via a push-button on/off switch on the instrument panel when additional wheel slip is desired or the car is mired in snow or mud
- ASR functionally integrates three subsystems—engine spark retard, throttle close down, and brake intervention
- The Corvette ASR system is capable of simultaneous or separate utilization of the engine torque control and brake intervention

- The throttle-cable-relaxer feature (introduced on the Corvette) communicates to the driver through the accelerator pedal when the system is active; the feedback is a pushing back of the accelerator pedal

ASR Operation

Understanding the Corvette's ASR system begins by understanding what it is not. ASR control does not increase the amount of grip available between the tire contact patches and the road surface. Instead, ASR (or any traction control strategy) is designed to help drivers get the most out of the grip that is there. The benefits to the driver include increased comfort, reduced anxiety and vehicle operation closer to the limit over a variety of road conditions.

Traction control systems have two functions. The first is to limit the amount of drive torque so it matches the driving situation and road conditions. The other, and, at times, somewhat conflicting function, is to satisfy the driver's desire for more acceleration.

The Corvette ASR system logic draws a balance between traction and directional control. Built-in parameters give directional control—via engine torque control—priority at high speeds, and traction—via brake intervention—priority at low speeds. The system also increases its sensitivity during slow vehicle acceleration and small throttle angles.

The Corvette ASR system is calibrated to allow some wheel slip during acceleration if it is deemed beneficial for the driving conditions. More slip is allowed in straightline acceleration than in turns.

There are a variety of traction control systems available in the marketplace, some more sophisticated in their execution than others. The Corvette system is among the most sophisticated, functionally integrating three subsystems into one electronic control unit (ECU).

The ASR electronic-control unit monitors several key inputs (i.e. drive wheel speeds, vehicle reference speed, the speed difference of the non-driven wheels, the front-to-rear wheel speeds on the same side of the car, vehicle acceleration and throttle position) in a three-tiered, two-stage system of traction control. The first two subsystems are methods of engine torque control, with air restriction (via throttle-cable relaxer) being the most potent. The three tiers or subsystems are:

- Throttle-cable relaxer (air restriction)
- Engine spark retard
- Brake intervention

The Corvette ASR system is capable of simultaneous or separate utilization of engine torque control and brake intervention. The use of engine torque control alone is common when encountering a slippery road condition at higher vehicle speeds. Brake intervention and engine torque control are common when attempting to accelerate on a split-coefficient surface—a low-coefficient surface under one wheel (e.g. ice) and a high-coefficient (e.g. dry pavement) surface under the other wheel.

The system is automatically activated when the vehicle is turned on. An off mode is available to the driver when additional wheel spin is desired or the vehicle is bogged down in mud or snow. The cruise control is automatically disabled during an ASR event and must be manually reset by the driver once the ASR activity is over.

Engine Torque Control—Air Restriction And Spark Retard

Engine torque control is the most effective method of reducing drive torque. The Corvette ASR system employs a throttle-cable relaxer in its traction control strategy. When activated, the throttle cam rotates a spring that connects to the pedal cam, closing the throttle valve and cutting the amount of airflow to the engine.

The throttle-cable relaxer transmits feedback to the driver through the accelerator pedal. As the throttle cam rotation occurs, the driver feels the accelerator pedal pushing back as the amount of throttle input is reduced which, in turn, cuts engine torque. The pedal feedback characteristic was first introduced on the Corvette.

Engine spark retard is another effective way to reduce engine torque, particularly when the demand is immediate and of short duration (e.g. encountering a short, slippery section of road at cruising speed). The system uses an RPM increment table in the engine's powertrain control module. The table allows the ASR system to select spark reduction that will improve driving performance without creating excessive temperatures in the engine and catalytic converter. The LT5 engine has two power tables (to account for its dual-power capability); the LT1 engine has one table.

Brake Intervention

Although the ABS and ASR systems use the same four wheel-speed sensors and are designed to work together, their method of brake intervention is different. The ABS controls the front wheels individually and the real wheels together. ASR, on the other hand, has individual rear brake control, making it possible to utilize the available traction on a split coefficient (i.e. one rear wheel on slick pavement; one rear wheel on dry pavement) road surface and improve acceleration.

Physical Integration

Integrating the ABS and ASR systems required the addition of four hydraulic valves on the ABS modulator valve assembly; a throttle relaxer consisting of a DC motor, connecting spring, cams and cables; including spark retard tables in the LT5 and LT1 powertrain control modules; and combining the control strategies into the microprocessors for the three subsystems into one ECU.

Routine or scheduled maintenance is not required on the ASR system.

Wheels	Coupe & Convertible	ZR-1 Coupe
Standard Type	Aluminum Alloy	Same as Coupe & Convertible
Size, Front (in.)	17 X 8.5*	17 X 9.5
Rear (in.)	17 X 9.5	17 X 11
	*17 X 9.5-in. on Corvettes Equipped W/ Z07 Sport Suspension	

NEW 94 1994 ZR-1 coupes are outfitted with new **five-spoke non-directional aluminum wheels.** The wheel diameter and width (17x9.5 front, 17x11 rear) are unchanged from 1993.

The five-spoke wheel design gives the ZR-1 a distinctive appearance. The ZR-1's brake rotors, which are visible through the spokes, are now protected against corrosion.

The coupe and convertible are equipped with 17 x 8.5-inch front wheels and 17 x 9.5-inch rear wheels. Front and rear tires are P255/45ZR17 and P285/40ZR17 respectively. The dissimilar wheel and tire sizes balance tractive efforts—fore, aft and laterally.

For optimum race track performance, the Z07 Sport Suspension option uses four 17 x 9.5-inch wheels with P275/40ZR17 Goodyear GS-C tires.

Tires	Coupe	Convertible	ZR-1 Coupe
Standard Type	Goodyear Eagle GS-C Steel-Belted, Directional, Asymmetrical	Same as Coupe	Same as Coupe
Standard Size, Front	P255/45ZR17	Same as Coupe	P275/40ZR17
Rear	P285/40ZR17	Same as Coupe	P315/35ZR17

NEW 94 The recommended **tire inflation pressure** for 1994 Corvette LT1 coupe has been lowered to 30 psi to improve ride quality.

Originally introduced as a Corvette exclusive in 1992, the Eagle GS-C has a directional and asymmetrical tread pattern. The directional groove design has superb water dispersing capabilities, and the asymmetry increases the contact area on the outer portion of the tread and volume void on the inner portion. The asymmetrical or dual-pitch sequence also reduces road noise by independently scrambling a greater number of small tread blocks on the inner portion of the tread, and fewer larger blocks on the outer portion.

The Eagle GS-C has a steel-belted, polyester cord body with a unique spiral overlay. The design provides superb uniformity, reduces heat buildup at high speeds and improves ride quality without inhibiting high-speed handling. Special compound belt wedges and a high-stiffness apex deliver maximum handling. This computer-aided design has superb wet and dry handling performance, heel and toe wear, cornering force and response and noise suppression.

Low Tire Pressure Warning System

The low tire pressure warning system (optional on coupes and convertibles and standard on ZR-1) is designed to monitor air pressure in each tire continuously while the vehicle is being driven. It is comprised of a small wheel module placed inside each tire on the wheel and a radio receiver located behind the instrument

panel. Should tire pressure fall below 25 PSI, an electrical signal is sent to a radio transmitter which illuminates the telltale in the driver information center (DIC) on the instrument panel.

Interior

NEW 94 **The Corvette's interior is completely redesigned** for 1994, with new carpeting, new door trim panels, new seats, a new two-spoke steering wheel, and a new look for the instrument panel and console.

The 1994 Corvette's standard reclining bucket seats and optional articulated Sport seats have leather seating areas; cloth upholstery has been discontinued. The new seats are designed for easier entry and exit. The top-of-the-line sport seats (standard on the ZR-1 coupe) feature a six-way power adjustment and power lumbar support.

The 1994 Corvette's new interior includes the following safety, comfort, and convenience features:

- **A passenger's side air bag** and knee bolster is standard equipment.
- Both door panels have additional storage space in the armrests under lift-up lids.
- The instrument panel's white graphics turn to **tangerine** at night.
- The driver's power window has a new **"Express Down" feature** that opens the window completely with a touch of the window control.
- **The tire jack** is mounted in an interior storage compartment behind the passenger seat.

Available interior colors are black, torch red, light beige, and light grey. Arctic white has been discontinued.

Radio

All standard Corvette radio is an electronically tuned Delco AM/FM stereo with seek, scan, cassette tape player, digital clock, four stereo speakers and a power antenna as standard equipment. In 1993, the receiver was relocated behind the seats for improved reception.

Two optional Delco/Bose music systems are available. The first system adds six tuned Bose stereo speakers to the features of the standard radio. The second system is optional for coupes and convertibles and standard equipment on ZR-1-equipped coupes. This top-of-the-line music system is an electronically tuned AM/FM stereo with automatic up/down seek, speed-activated volume control, stereo digital compact disc player, digital clock and six tuned Bose stereo speakers.

A delay feature for the accessories supplies power to the entertainment system and power windows when the ignition key is turned to the "OFF" position for 15 minutes or until a door opens—whichever occurs first.

Exterior

Convertible Backlight

NEW 94 Corvette convertibles have a bright outlook in 1994 with the introduction of **a heated glass** backlight. Operation of the convertible top is unaffected by the change to a glass rear window.

Colors

NEW 94 Two **new exterior colors** are available in 1994: Admiral Blue and Copper metallic.

Passive Keyless Entry

The 1994 Corvette is equipped with a Passive Keyless Entry (PKE) system as standard equipment. Unlike other keyless entry systems that require the push of a button on a key-fob, the Corvette PKE requires no specific action—simply approach the car and the system automatically unlocks the driver's door (or both doors, depending on the setting) and turns on the interior light. Walk away from the car and, within a few feet, the system automatically locks both doors. The PKE also automatically arms and disarms the standard universal theft-deterrent system.

Active features of the key-fob-based transmitter include a separate passenger door button and a hatch release button for coupes. Switching the system from opening only the driver's door to both doors (or vice versa) is simple. It only requires holding the passenger door button down on the fob for two seconds while the key is in the ignition. When the system has made the switch, it signals the driver by cycling the door locks.

The PKE system can be manually turned on and off by holding the door button down for two seconds with the key out of the ignition. The system signals the driver when the switch has been made by cycling the door locks. When the passive system is disarmed, the horn does not honk and the passive keyless entry telltale on the instrument panel won't illuminate upon ignition. (When the system is active, the horn honks whenever the car locks and the telltale lights for two seconds upon ignition.)

A security feature of the PKE system is that it prevents the doors from locking when the keys are left in the ignition. In this situation, the PKE system automatically unlocks the car after the door closes and will not honk the horn—a signal to the driver the system has not been armed.

The PKE system consists of a battery-operated transmitter or key-fob, that is designed to send a unique code within its magnetic field. As in a car radio, the PKE receiver picks up the code through antennas. The PKE system has two antennas—one in the driver's door and one in the back of the vehicle on the coupe (the convertible has one in each door).

ZR-1 Unique Exterior Appointments

There are five unique exterior appointments that distinguish a ZR-1 from the LT1-powered coupe and convertible. They are:

- Three "ZR-1" emblems—one on the rear fascia and one each above the "gills" located on either side.
- Wider P315/35ZR17 rear tires (standard Corvettes have P285/40ZR17 tires) and wider P275/40ZR17 front tires (standard Corvettes have P255/45ZR17 tires).
- Center High-Mounted Stop Lamp (CHMSL) is located on the rear hatch glass. The LT1-equipped Corvettes have a CHMSL recessed in the rear fascia.
- A wider body (approximately 3 inches total) from the doors rearward to accommodate the larger Goodyear tires.
- A raised-letter "Corvette" emblem on the rear fascia. All LT1-equipped Corvettes have the word recessed in the rear fascia.

Electrical

The Corvette has always been a leader in using sophisticated computers to monitor vital vehicle functions and control high-tech components like the anti-lock braking system and ASR traction control strategy.

The 1994 model has up to 16 microprocessors on board with a total of 154K of ROM (read only memory) and 12.5K of RAM (random access memory). These microprocessors operate everything from the engine, radio and air bag, to the heater and air conditioning (HVAC) system, the selective ride and handling suspension and the combination ABS/ASR anti-lock brakes and traction control strategy.

PASS-Key Universal Theft-Deterrent System

Introduced on the 1986 Corvette, the PASS-Key security system thwarts a thief's most common method of attack—defeating the steering column mechanism—without changing the way the vehicle is started. The ignition key is embedded with an electronically coded pellet that must match the alloy contacts in the ignition lock. A control module with an electronic logic board decides whether the values match and activates or deactivates the anti-theft mode.

A thief using an improper key causes an immediate two-to four-minute delay before another attempt with a key can be made. Any attempt to bypass the entire ignition system leaves the starter system and fuel delivery system inoperative.

Warranty

GM's 3-year/36,000-mile limited warranty covers repairs for the 1994 Corvette, including labor and parts to correct any defects in material or workmanship occurring during the warranty period. Warranty features include air conditioning repair, towing, no-cost warranty transfer, and 5-year/50,000-mile emissions control system coverage. Items not covered include tires (which are covered by their manufacturer) and normal maintenance.

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Corvette Addendum

Extended Mobility Tires

The world's first run-flat tires to be fitted on conventional wheels are available as an option on Corvette in 1994. The new Goodyear GS-C EMT (extended mobility tire) can run up to 200 miles at 55 mph at zero inflation pressure.

The extended mobility tires are the same size as conventional Corvette tires (P255/54ZR17 front and P285/40ZR17 rear), and fit standard Corvette wheels. Run-flat tires are not available with the Z07 suspension or on ZR-1 models.

An EMT tire without air does not appear to be flat; therefore, the EMT option requires a low tire pressure warning system to alert the driver to a loss of air. The handling, ride, and lateral stability of the run-flat tires are impressive even at zero inflation.

The 1994 Corvette's optional GS-C EMT tires employ reinforced sidewalls and bead areas to keep the tire on a standard rim during cornering. Special polymers help dissipate heat when the tire is operated with low or zero air pressure.