



1991 SATURN

“It’s not every day you start a new car company from scratch and have all these people waiting to see what you turn out. The world has its eye on us. And there’s not a person in this company who doesn’t feel it.”

—Dana Andreas,
Saturn Powertrain Engineer



Saturn was a bold move, from a lot of perspectives. Ten years ago, who would ever have predicted a new American car company coming on the scene?

A company that, first of all, would negotiate a labor agreement so thin it fits in a file folder, instead of the usual three-inch-thick binder.

Then construct a totally new, state-of-the-art and environmentally conscious manufacturing and assembly complex.

And then create a work setting that gives all of its people—engineers, designers, and manufacturing technicians—the freedoms they’ve been clamoring for.

The chance to push ahead with notions they believe in. To feel as if what they do makes a difference. And to forget about hierarchy, red tape, time clocks, and all the other trappings of bureaucracy that so often come between people and the product they’re building.

In short, Saturn was the first time in a long time that so many people had come together behind the same idea.

And as anyone at Saturn will tell you, the idea wasn’t to build a car jam-packed with every whiz-bang technological advance one could throw into it.

It was to build a good, reliable, well-designed, and exceptionally engineered car. One that could compete with what seemed to be the world’s favorite small cars—all the Hondas, Toyotas, Nissans, and other competitors that keep driving away with market share.

And for good reason. They’re good cars. In fact, so good that during the design phase Saturn engineers purchased some two hundred of them.

“We figured the only way to beat the competition was to drive the competition,” explains Jay Wetzel, one of Saturn’s founding engineers.

So that’s what the engineers did. They drove the competitive cars back and forth to work. They picked them apart to find out what performed, what didn’t, and why. And they tested them against prototype Saturns in virtually every road and weather condition imaginable—from the bitter cold winters of Kapuskasing, Canada, to the European proving grounds operated by Lotus in Millbrook, England.

They studied the competition with one goal in mind—to find out what American car buyers want most in a small car.

As Jay puts it, “Most great cars in history reflect the personality of one person. In our case, that person just happens to be the consumer.”

As passionate as the engineers are about these new Saturns, they’ll be the first to point out that they didn’t design them just to please themselves. They designed them to please consumers.

Consumers who, as they learned in numerous research clinics, can be pretty emphatic about what they want.

A car that’s nimble and quick to respond. A car that’s fuel-efficient, roomy, dependable, and easy to maintain—meaning you don’t have to tear other things apart just to get to the part that needs servicing.

And a car with a personality all its own—no cookie cutter stuff. One that borrows from the best of the best worlds: the reliability you’ve come to expect from the Japanese and the performance you’ve come to respect in the Europeans.

All of which, as Jay explains, wouldn’t be that big a deal for a sticker price of thirty thousand. The trick, however, was to do it for a lot less than half that.



SATURN SL1



The Saturn SL is priced even more economically than the SL1. It features slightly different upholstery and wheel covers, and it's only available with a manual transmission and manual steering.

The SL1 is what Saturn engineers describe as their price/value contender.

It comes outfitted with a peppy 1.9-liter single-overhead-cam fuel-injected engine—tuned to give you all the power you need to zip through the city and cruise the freeways.

The SL1 also comes standard with a five-speed manual transmission and some pretty impressive EPA ratings—an estimated thirty-seven miles per gallon on the highway and twenty-seven in the city. It has front-wheel drive, four-wheel independent suspension, and a long list of “standard” features typically listed as “optional” on competitive models.

Things like variable-effort power steering. An adjustable steering column.

Full analog instrumentation, including a tachometer, trip odometer, and engine temperature gauge. Fourteen-inch tires. Tinted glass. Halogen headlights. Reclining front bucket seats. Remote trunklid and fuel-filler door releases.

Features which make it clear that Saturn's notion of price/value isn't what it is to some manufacturers—a car stripped to the bone, except for the bare essentials.

In fact, the only portion of a Saturn that's stripped down is the sticker price.



Saturn engineers made the most of storage space—including map pockets in the doors, a large, deep glove compartment, mesh pockets on the

backs of the front seats (except in the SL), and a few other convenient nooks and crannies.



“The real challenge in building these engines was not to get carried away by technology, but to perfect simplicity. To pull everything we could from the least number of components.”

—Peter Dugdale,
Engine Engineer

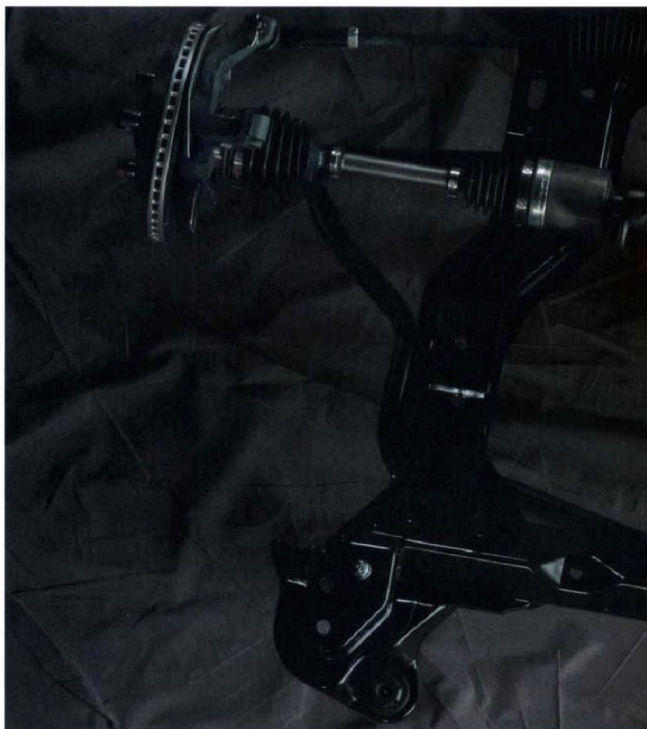
That’s the thinking that Peter brought with him when he joined Saturn back in 1985. And it’s the same philosophy that guided the powertrain team in their development of Saturn’s two new fuel-injected 1.9-liter cast aluminum engines.

The single-overhead-cam engine, designed for maximum fuel efficiency. And the dual-overhead-cam engine, designed for performance, with competitive fuel economy.

Obviously, each engine is tuned to please a slightly different driver. Yet, there’s one tuning characteristic they both share. Both, according to Peter are very “torque-heavy” engines. Meaning that they’ll respond every bit as well in the city, when you’re battling stop-and-go traffic, as on the freeway, when you’re accelerating through the gears to cruising speed.

A performance characteristic due, in part, to the way each engine is linked to Saturn’s new automatic transmission—by a device called the powertrain control module. It’s a computer that puts these two components in constant communication with each other.

Which is great. Because the better the engine and transmission can respond to each other’s needs, the better your Saturn will respond to yours.



“Ideas this radical usually get shot down. But then, that’s what’s so nice about Saturn. No idea is considered too radical to explore.”

—Bob Downs,
Transmission Engineer

What Bob’s referring to is Saturn’s new computer-controlled automatic transmission—an innovation that’s already racked up eleven patents.

It’s what Bob describes as a “smart transmission,” programmed to seek the perfect shift no matter where you are—climbing a mountain pass in the Rockies or cruising down a sun-baked freeway in

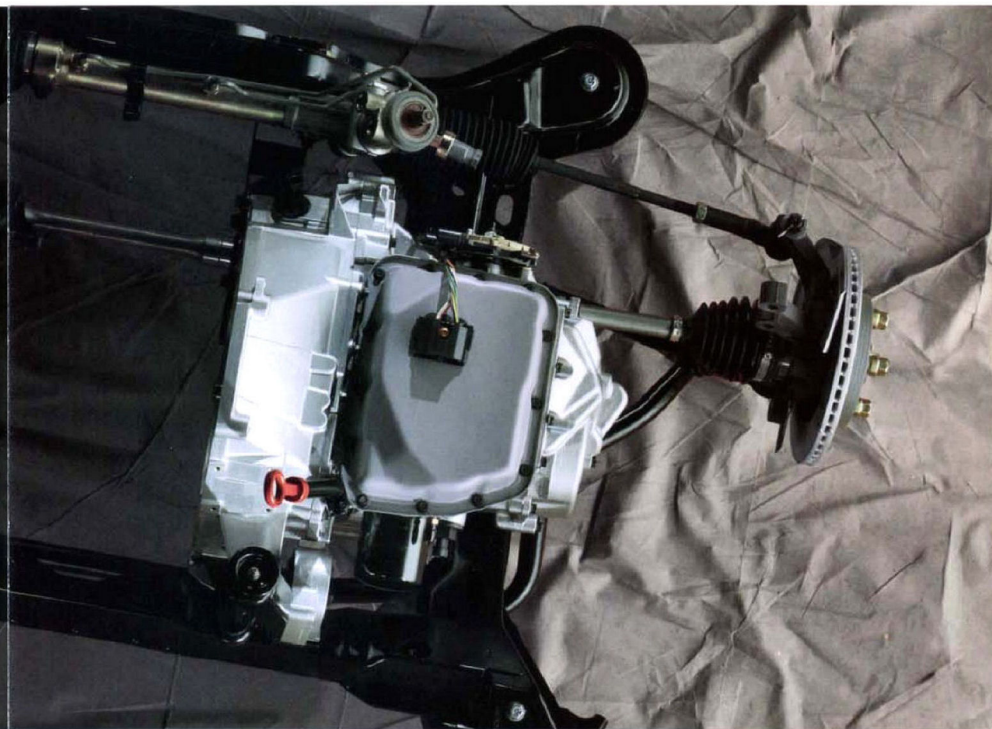
Southern California.

With the help of algorithms, silicon sensors, and tiny solenoid valves, it detects influencing variables—temperature, altitude, turbine speed, engine torque, oil temperature—and then translates these computer-based messages into mechanical action.

The result: a shift that feels much the same regardless of road and weather conditions. And a transmission that, amazingly enough, can even be manufactured on the same assembly line as the manual—another first in the U.S. auto industry.

Which brings to mind another Saturn feature you may be wondering about—the five-speed manual. It’s designed to be tight, yet smooth. To have a very light clutch feel and an easy-to-manuever gearshift.

“We tackled the job the only way we knew how,” explains engineer Warren Leet. “We got our hands on the best transmissions out there. Then we dissected them, extracted bits and parts of each, built on that, and produced what we think is an even better product.”



SATURN SL2

It's a car most accurately described as a sport sedan—a comfortable balance between a small Japanese car and a European touring sedan, with a good blend of what you might expect from each—reliability and performance, respectively.

The SL2 comes with Saturn's performance engine, a 1.9-liter dual-overhead-cam multipoint fuel-injected engine that delivers 124 horsepower at 6000 rpm. Working with a five-speed close-ratio manual transmission (automatic is optional), this engine's tuned to give you an extra surge of power, an extra bit of thrust when you accelerate. And to give you an estimated EPA rating of thirty-four miles per gallon on the highway, twenty-four in the city.

The SL2 is front-wheel drive, with a sport-tuned suspension that includes stabilizer bars in both the front and rear. The front bar is larger than the one in the rear to provide the stability you need for quick cornering.

The tires are speed-rated 195/60R15 steel-belted performance radials designed especially for Saturn by Firestone.

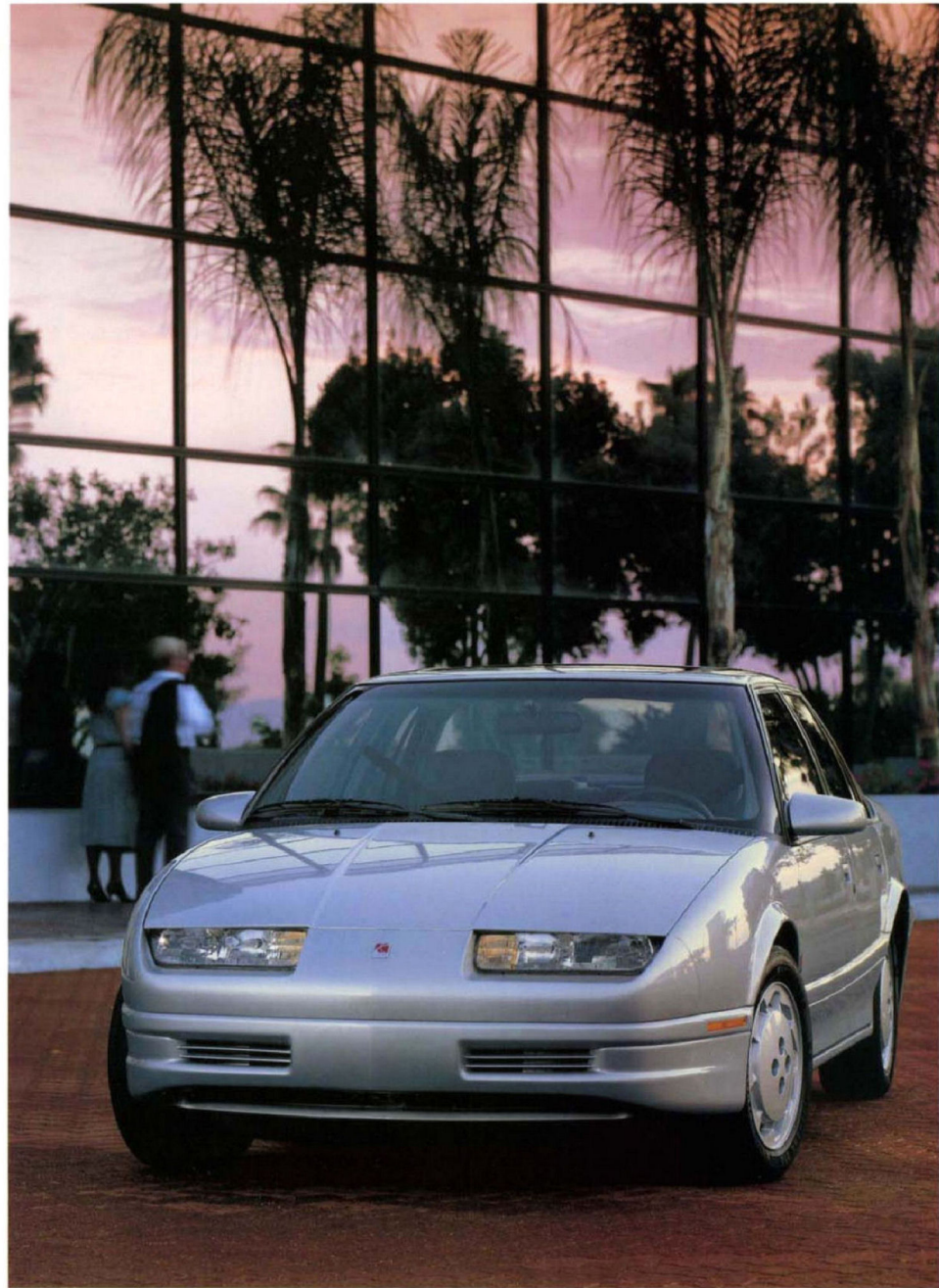
The SL2 comes with a long list of standard features—including alloy wheels, full analog instrumentation, and variable-effort power steering, to name a few.

And like the SL1, it also comes with a sticker price that may surprise you. Pleasantly.



The Saturn sedan—the SL, SL1, and SL2—features more than 100 cubic feet of interior space.

The SL2 is styled a little differently than the SL1. It features body-colored bumpers and door handles, a rear reflector panel, and fifteen-inch alloy wheels.



“You can’t just call people up and say: ‘Hey, can we borrow your crash data?’ So you do the next best thing—you collect your own.”

—Ken Wasmer,
Structural Engineer

Which is what Ken’s team had in mind when they purchased seven brand-new import vehicles, drove them back to the testing facility, and promptly ran them into the nearest wall.

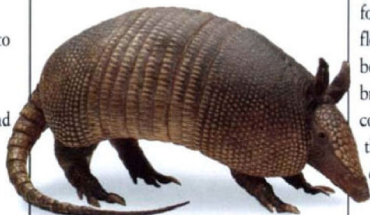
“It’s the only way to find out what our competition’s made of,” says Ken. “And if we’re going to be the company we say we are, then we have to go beyond what’s expected or required of us.”

Go beyond is precisely what Ken’s team did. They pushed Saturn crash testing beyond federal safety requirements—conducting additional crash tests at higher speeds and various angles. With the help of Cray supercomputers and simulation software, they designed strategically placed “crash zones” into every Saturn—to help dissipate the energy of a crash before it reaches vehicle occupants.

They also developed a special ramp

that fits beneath the rear seat to help prevent people from sliding under the safety belts—“submarining,” as it’s called in the industry. And a new patented safety belt latchplate that makes it a lot easier for parents to secure child safety seats.

“Safety is a peculiar business to be in,” says Ken. “You want people to appreciate the fact that you did a good job for them. You just hope they never have to find out how good.”



“Steel would have been the easy way to go, but not necessarily the smartest—at least not from the consumer’s perspective.”

—Dave Whittaker,
Body Panel Engineer

According to Dave, Saturn engineers had done enough testing to know that polymer

materials, combined with the right paint process, would beat steel hands-down when it comes to dents, dings, chipping, rust, oxidation, and corrosion.

And that’s why they opted to use spaceframe technology to construct the Saturn frame and a new dent-resistant polymer for the bodyside panels.

The paint system they chose represents one of the most technologically-advanced around. A primer specifically formulated to adhere to the panel and be flexible, to *give* upon impact. A water-borne acrylic that lends the color finish a brilliant, lustrous, “wet” look. And a clear-coat that helps shield the acrylic against things that can eventually ruin a finish—dust, dirt, tree sap, acid rain, and ultraviolet light.

These features work together to give Saturn cars a competitive advantage both aesthetically and functionally.

Saturn bodyside panels are two to four times more resistant to dents and dings than steel. The Saturn paint finish is ten times more resistant to chips. Oxidation and rust aren’t even an issue.



SATURN SC

Convenient as they may be, four doors aren't the answer for everyone.

Some people have other, more pressing needs to fulfill. Like one of those lifelong and burning desires to own a sport coupe. A vehicle known for its sleek lines, aerodynamic qualities, and ability to accentuate the pure pleasure of driving.

These are the people the Saturn engineers had in mind when they designed the Saturn coupe.

The SC comes standard with Saturn's 1.9-liter dual-overhead-cam multiport fuel-injected engine, a five-speed manual transmission, and an estimated EPA rating of thirty-four miles per gallon on the highway and twenty-four in the city. It also has front-wheel drive, a sport-tuned indepen-



dent suspension, speed-rated steel-belted tires, alloy wheels, a leather-wrapped steering wheel, and a few other pleasing surprises.

But then, these are things you'll

have to experience for yourself. As one Saturn engineer comments, "Our biggest challenge will be getting people into our showrooms. Once we get them behind the wheel of a Saturn, we're home free."

The interior of the SC—just like the interior of all Saturns—is ergonomically designed. All the gauges are comfortably placed within the driver's line of vision and all the controls are very easy to reach.



The SC features a sport-tuned suspension system with front and rear stabilizer bars, as

well as a strut-valving system tuned for better performance handling.



SERVICE / PERFORMANCE

"It's not every day we get a chance to start fresh, so we want to do it right."

—David Fischer,
Saturn Retailer

Right to David—as well as to all the other retailers who joined Saturn—meant setting a few standards.

Developing a stringent screening process for retailers who apply to own a Saturn facility. And creating an extensive training program for individuals who want to help sell and service the cars.

The retailers who joined Saturn are all too familiar with the image "car dealer" conjures up in the minds of most consumers.



Needless to say, it's an image they'd all like to change.

"It's not enough to be selling an exceptional car," explains David. "The people selling it and servicing it also have to be exceptional. And that's what all our screening and training programs are about."

Retailers aren't alone in their concerns. Saturn engineers have also been doing their part to cultivate Saturn's reputation by designing cars that are easy to service—therefore cutting down on what usually accounts for a good bit of the repair bill—labor.

It's a difference you'll appreciate when you start poking around under the hood and notice the color-coded dipsticks, the steel timing chain, and the spin-off oil

filter on the automatic transmission, to name just a few conveniences.

And when you go for your first service check and watch technicians connect a little device called the "portable diagnostic tool" to your car's powertrain control module, and then download a virtual "transcript" of engine and automatic transmission activity—all in less than a minute.



"What makes this car work is attention to detail. Nothing more, nothing less."

—Stan Fowler,
Development Engineer

Stan went after that detail the same way he always does—by pushing Saturns to their limits on the track. Just about as close to the edge as he can get without falling off.

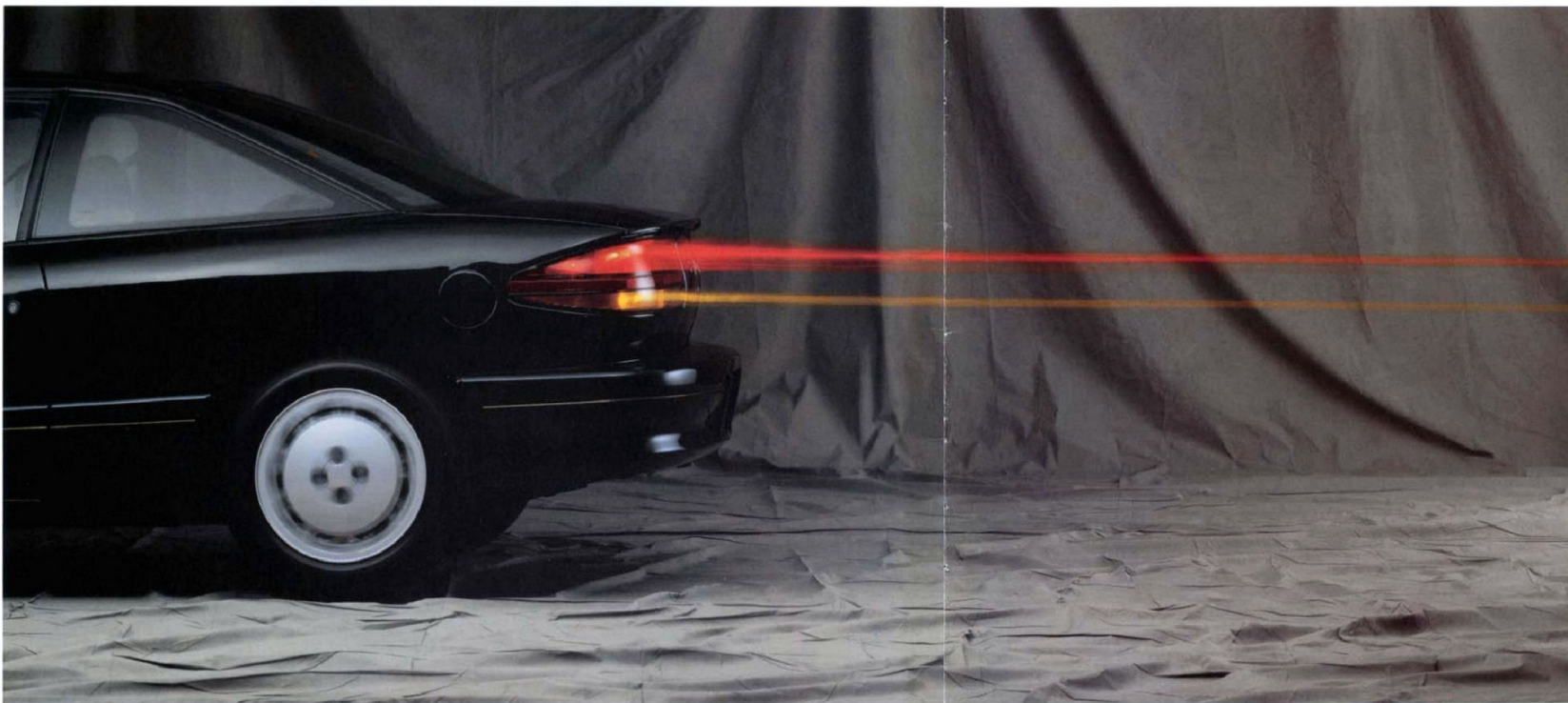
"When you've got your foot pressed to the floor, with the track moving outside at a blur, nothing is subtle," Stan says. "That's when you find out just how good a job you've done."

It's also when you really begin to appreciate Saturn features such as the wide stance and longer wheelbase—characteristics that increase stability and smooth out the ride over rough surfaces.

All told, Saturn engineers subjected the sedans and the coupe and all their various components to a grueling total of more than six million test miles.

First, they took the cars to the desert proving grounds in Mesa, Arizona, a track with enough variation to mimic every road surface imaginable. Then it was off to Kapuskasing, Canada, where the average temperature four months out of the year is a nippy twenty below zero. And then to England, to the Millbrook Proving Grounds operated by Lotus, for a 200,000-mile independent evaluation, to see how well the cars measured up to European driving conditions—lots of hills, switchbacks, and extended high-speed cruising.

As Stan says, there's really not any magic in the design of these cars. Just attention to detail. Meticulous finessing. And constant refining.



SPECIFICATIONS

| ENGINE AND ELECTRICAL | | | | |
|------------------------------------|--|---|----------|----------|
| Availability | SL, SL1 | SL2, SC | | |
| Engine Type | 1.9-liter, SOHC, 8-valve 4-cyl. | 1.9-liter, DOHC, 16-valve 4-cyl. | | |
| Horsepower (SAE Net) | 83 hp @ 5000 rpm | 124 hp @ 6000 rpm | | |
| Displacement | 116 cu. in. (1907 cc) | 116 cu. in. (1907 cc) | | |
| Torque (SAE Net) | 107 ft. lbs. @ 2400 rpm | 122 ft. lbs. @ 4800 rpm | | |
| Redline | 5600 rpm | 6500 rpm | | |
| Bore & Stroke | 123 in. x 1.54 in. (82 mm x 90 mm) | 123 in. x 1.54 in. (82 mm x 90 mm) | | |
| Compression Ratio | 9.2:1 | 9.5:1 | | |
| Fuel System | Fuel injection | Multi-port fuel injection | | |
| Valve Train | 2 valves per cylinder, chain-driven | 4 valves per cylinder, chain-driven | | |
| Engine Block | Aluminum alloy with cast-iron cylinder liners | Aluminum alloy with cast-iron cylinder liners | | |
| Cylinder Head | Aluminum alloy | Aluminum alloy | | |
| Emission System | 3-way catalyst | 3-way catalyst | | |
| Ignition System | Distributorless electronic | Distributorless electronic | | |
| Alternator | 12-volt, 85-amp | 12-volt, 85-amp | | |
| Battery | 12-volt, 35 amp cranking amps | 12-volt, 35 amp cranking amps | | |
| Recommended Fuel | 87 octane unleaded regular | 87 octane unleaded regular | | |
| BODY/SUSPENSION/CHASSIS | | | | |
| Body Type | Steel spaceframe | | | |
| Exterior Panels | Polymer bodyside panels and bumper fascias; galvanized steel hood and trunklid; steel roof | | | |
| Bumpers | 5-mph front and rear | | | |
| Front Suspension | Independent MacPherson strut lateral link with coil springs and tubular front stabilizer bar | | | |
| Rear Suspension | Independent rx-link with coil springs | | | |
| Steering Type | Manual rack-and-pinion (SL); variable-effort power rack-and-pinion (SL1, SL2 & SC) | | | |
| Steering Ratio | 24:1 (SL); 18:1 (SL1, SL2); 16:1 (SC) | | | |
| Steering Wheel Turns, lock-to-lock | 4.0 (SL); 3.0 (SL1 & SL2); 2.7 (SC) | | | |
| Turning Circles, curb-to-curb | 38 ft. (SL, SL1 & SL2); 37 ft. (SC) | | | |
| Braking System | Dual-diagonal, power-assisted front disc/rear drum | | | |
| Front Disc | Ventilated, 9.86 in. (250.5 mm) diameter | | | |
| Rear Drum | 7.87 in. (200 mm) diameter | | | |
| Optional Antilock 4 Wheel Disc | | | | |
| Wheels | 14" steel with full covers (SL, SL1); 15" aluminum alloy (SL2, SC) | | | |
| Tires | T5 / 70R14 all-season steel-belted radial (SL, SL1) 195/60R15 performance steel-belted radial (SL2, SC) T115/70R14 steel-belted radial compact spare | | | |
| Exhaust System | Stainless steel | | | |
| DRIVETRAIN | | | | |
| Type | Transverse front-engine / front-wheel drive, with equal length halfshafts | | | |
| Transmissions: | MANUAL | OPTIONAL AUTOMATIC | | |
| | SL / SL1 | SL2 / SC | SL / SL1 | SL2 / SC |
| Ratio (1:1) 1st | 3.077 | 3.230 | 2.238 | 2.526 |
| 2nd | 1.809 | 2.055 | 1.266 | 1.556 |
| 3rd | 1.207 | 1.423 | 0.811 | 1.030 |
| 4th | 0.861 | 1.032 | 0.595 | 0.700 |
| 5th | 0.643 | 0.730 | — | — |
| Final Drive | 4.060 | 4.060 | 4.133 | 4.133 |
| CAPACITIES | | | | |
| Engine Coolant | 7.0 quarts (6.6 liters) | | | |
| Engine Oil | 4.0 quarts (3.8 liters) | | | |
| Fuel Tank | 13.2 gallons (50.0 liters) | | | |
| EPA Estimated MPG (City/Highway) | | | | |
| Manual | 27/37 (SL, SL1) | 24/34 (SL2, SC) | | |
| Automatic | 26/33 (SL, SL1) | 23/32 (SL2, SC) | | |
| EPA Passenger Volume | 89 cu. ft. (Sedans) | | | |
| EPA Cargo Volume | 12 cu. ft. (Sedans) | | | |
| | 11 cu. ft. (Coupe) | | | |
| EXTERIOR DIMENSIONS | | | | |
| | SEDANS | COUPE | | |
| Wheelbase | 102.4 in. (2601 mm) | 99.2 in. (2520 mm) | | |
| Overall Length | 176.3 in. (4478 mm) | 175.8 in. (4465 mm) | | |
| Overall Width | 67.6 in. (1718 mm) | 67.6 in. (1718 mm) | | |
| Overall Height | 52.5 in. (1334 mm) | 50.6 in. (1286 mm) | | |
| Track, front | 56.8 in. (1443 mm) | 56.8 in. (1443 mm) | | |
| Track, rear | 56.0 in. (1422 mm) | 56.0 in. (1422 mm) | | |
| Minimum Ground Clearance | 5.00 in. (127 mm) | 5.00 in. (127 mm) | | |
| Weight Distribution | 61% front / 39% rear | 62% front / 38% rear | | |

| EXTERIOR DIMENSIONS (continued) | | | | |
|---|--------------------|-------------------------|--------------------|-------------------------|
| Curb Weight: Manual transmission and air conditioning | SL/SL1 | 2325.0 lbs. (1054 kg) | | |
| | SL2 | 2415.6 lbs. (1095.7 kg) | | |
| | SC | 2393.1 lbs. (1085.7 kg) | | |
| Optional automatic transmission and air conditioning | SL/SL1 | 2356.3 lbs. (1068.8 kg) | | |
| | SL2 | 2445.5 lbs. (1109.3 kg) | | |
| | SC | 2421.3 lbs. (1099.1 kg) | | |
| INTERIOR DIMENSIONS | | | | |
| | SEDANS | | COUPE | |
| FRONT | | | | |
| Head Room | 38.5 in. (979 mm) | | 37.5 in. (952 mm) | |
| Leg Room | 42.5 in. (1080 mm) | | 42.6 in. (1081 mm) | |
| Shoulder Room | 54.3 in. (1379 mm) | | 53.0 in. (1346 mm) | |
| Hip Room | 51.6 in. (1312 mm) | | 51.3 in. (1304 mm) | |
| REAR | | | | |
| Head Room | 36.3 in. (923 mm) | | 35.0 in. (888 mm) | |
| Leg Room | 32.6 in. (827 mm) | | 26.4 in. (672 mm) | |
| Shoulder Room | 54.3 in. (1380 mm) | | 52.8 in. (1341 mm) | |
| Hip Room | 50.7 in. (1289 mm) | | 49.2 in. (1251 mm) | |
| COLOR COMBINATIONS | | | | |
| EXTERIOR | INTERIOR | | EXTERIOR | |
| | SEDANS | COUPE | | ACCENT STRIPE (SC ONLY) |
| | SL/SL1 | SL2 | SC | |
| White | Blue Tan | Blue Tan | Black Tan | Bright Red Gold |
| Silver | Blue | Blue | Black | Bright Red |
| Silver/Grey | — | Grey | Black | Bright Red |
| Grey | Grey | — | — | — |
| Beige | Tan | Tan | Tan | Bright Red |
| Light Blue | Blue | — | — | — |
| Blue | — | Blue | — | — |
| Bright Blue | — | — | Blue | Silver |
| Blue Green | — | Tan | Tan | Gold |
| Blue Black | — | Blue | — | — |
| Black | — | — | Black | Gold |
| Red | — | — | Black | Silver |
| Red/Silver | — | — | Black | Bright Red |
| Medium Red | Tan | Tan | — | — |
| Medium Red/Silver | — | Tan | — | — |
| SATURN SAFETY FEATURES | | | | |
| OCCUPANT PROTECTION: Automatic safety belt system for driver and right front passenger including visual and audible warning system • Manual lap/shoulder safety belts, outboard rear seat positions • Manual lap safety belts, front/rear seat positions, where applicable • Energy absorbing steering column • Energy absorbing instrument panel • Energy absorbing seatback tops, front • Interlocking door latches • Side-guard door beam • Passenger-guard inside door lock handles • Inertia-locking, folding front seatbacks, two door models (manual release) • Safety armrests • Head restraints, driver and right front passenger (adjustable) • Break-away inside rearview mirrors • Security door lock and door retention components | | | | |
| ACCIDENT AVOIDANCE: Side marker lamps and reflectors • Parking lamps that illuminate with headlamps • Four-way hazard warning flashers • Backup lamps • Center high-mounted stop lamp • Directional signal control with lane change feature (turn signal lamp) • Windshield defroster, washer and multi-speed wiper • Inside rearview mirror • Outside left rearview mirror (right mirror where applicable) • Brake system with dual master cylinder and warning light • Starter safety switch • Dual action hood latch • Low glare finish on inside windshield moldings, wiper arms and blades, metallic steering wheel surfaces • Illuminated heater and defroster controls • Tires with built-in tread wear indicators | | | | |
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