

VOLVO



A car you can believe in.



Automotive writer Rich Ceppos's observations about Volvos bear repeating as much today as when they first appeared in the February, 1981 issue of *CAR AND DRIVER*: "This year's cars look almost exactly like last year's cars, which look the same as they did the year before that. While this would logically lead you to believe that Volvos have changed very little over the years, nothing could be further from the truth. For over a decade, a steady mechanical evolution has been taking place under the surface and, every year, the serious-minded Swedish engineers have made their car a little bit better. . . ."

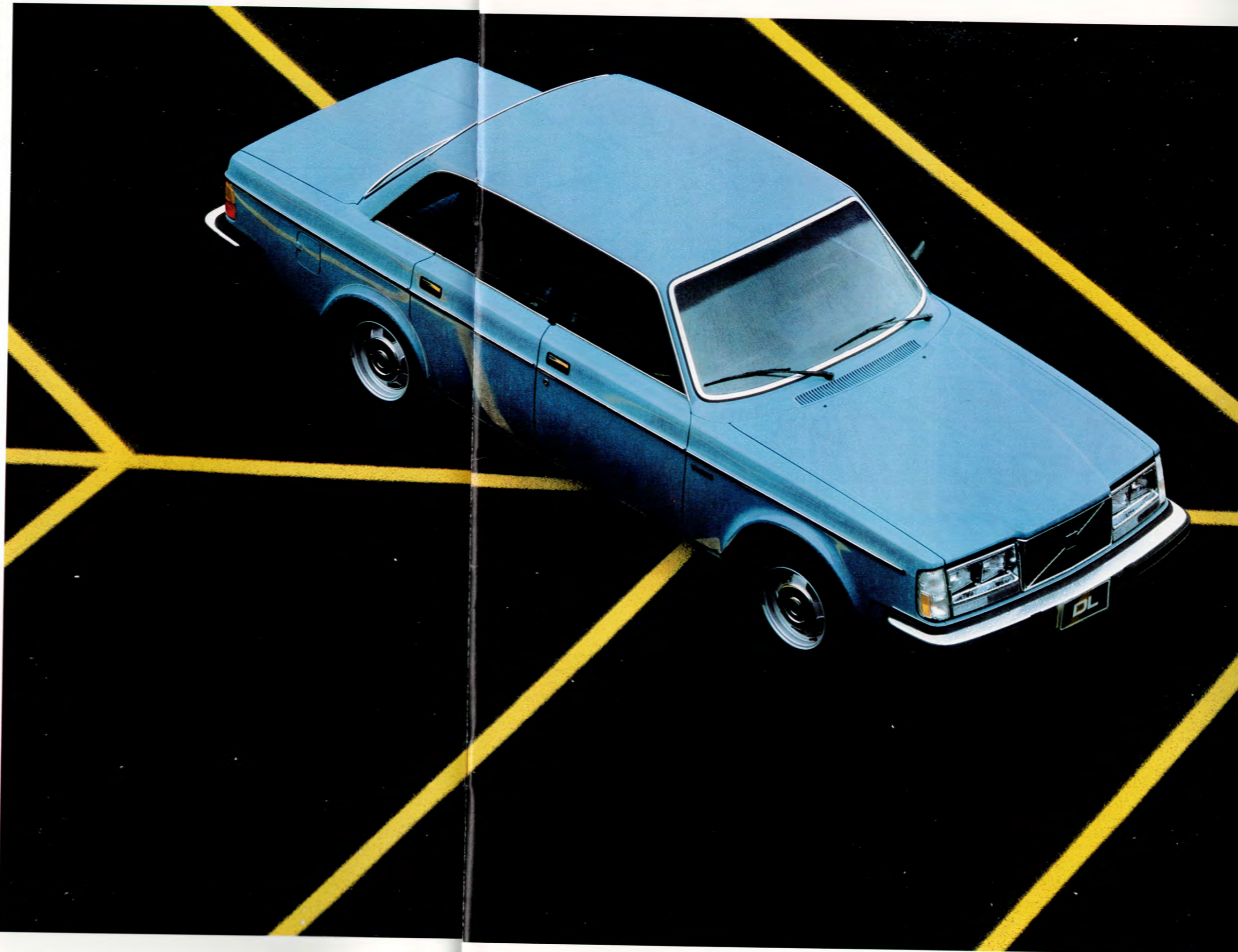
From the time of their introduction in this country, he writes, "Volvos were considered honest, forthright vehicles, anti-style and anti-annual model change. Not that their reputation has changed much since. Volvos are known to be rugged. (Remember the ads showing them stacked six high?) Their durability is legendary."

Fortunately for us, today's new car buyers are more knowledgeable, demanding, and frugal than ever before: as their standards for buying a new car become higher, so do the odds of our making a sale.

DL

Two-door sedan
Four-door sedan

Four-cylinder
Four-cylinder



When you get down to sticker price, the DL sedan — the basic Volvo — is positively luxurious.

"I don't believe it!" is a common reaction when people realize that their investment in a Volvo DL can still buy so much car. The fact is that standard equipment includes practical, thoughtful, even luxurious features that may cost you extra on some other cars. For example, tinted glass on *all* the windows. Full interior and trunk carpeting. Cloth upholstery. A *six*-digit odometer. A quartz crystal clock. An electric rear window defroster. On the four-door DL—perhaps the perfect family sedan—a centrally controlled door-locking system, and child-proof safety locks for the rear doors. For a complete list of what's standard on the DL, see page 16.

Now, it may be that even though you are trying to hold the line on cost, you still need air-conditioning. Or, you'd like cruise control, or power windows....Take heart. Without gouging your bank account, or ballooning your monthly payments, you can pick and choose the accessories that will make our basic Volvo your Volvo.

DL

Wagon

Four-cylinder

"If you think of an imported station wagon as embodying Old World quality and limitless practicality, then Volvo is the standard bearer!"—MOTOR TREND's Import Car Buying Guide.

MOTOR TREND continues: "The Swedish manufacturer's cars are getting rather large by current standards, but that's hardly a drawback for a wagon. Especially when outstanding engineering blesses it with surprising maneuverability and fuel efficiency. And, of course, Volvo durability is legend."

The key to that "surprising maneuverability" is the simple fact that the DL wagon is a DL sedan in disguise. The overall length of the sedan and the wagon is the same (192.4"/489 cm). Their overall width (67.2"/171 cm) and turning radius are the same (32'2"/9.8 metres). Frankly, the reason such attributes are missing from other wagons remains a mystery to us. . . .

Despite its sedan-like similarities, the DL wagon has an enormous hauling capacity. With the rear seat down, the cargo area measures roughly six by four by three feet—in all, seventy-six cubic feet, at nearly right angles (1.8 by 1.2 by 0.9 metres—in all, 2.2 cubic metres).

To make it easy to get things into the back, the tailgate is nearly square and hinged at the top, so it'll never be in your way. Gas-filled springs enable you to open and close it one-handed. And the floor of the cargo area is only twenty-three inches (58.4 cm) from the ground.

Though it's intended to be practical, the interior of the DL wagon is not at all spartan. The cargo area, for example, is fully carpeted. Storage compartments are built into the front doors. There's a vanity mirror in the lighted glove box.

Of course you can always add available options and accessories: among them, air-conditioning, power windows, a roof rack. In any event, you'll still get a Volvo sedan inside your Volvo wagon at no extra cost.



GL

Four-door sedan

Four-cylinder

Six-cylinder Diesel

Although the Volvo GL delivers fuel economy, it can satisfy even an oil sheik's penchant for opulence.

With its four-cylinder gasoline engine, or six-cylinder diesel, the GL sedan won't drain your wallet at the pump, as the typical luxury car is likely to these days.

Yet, almost the only touch of opulence that you select is the audio system.

What comes standard?

A stately plush velour interior, color-coordinated with plush carpeting that extends into the trunk. A heated driver's seat. An electric tachometer.* A sunroof. Dual remote side mirrors. Intermittent front wipers. Air-conditioning.† Power windows. Twenty-five spoke alloy wheels.

Roominess is also synonymous with luxury, and with Volvos: enough for all the shoulders and all the knees of five adults in the GL sedan. Nor is it necessary to travel light. A cavernous trunk measuring 13.9 cubic feet (0.4 cubic metres) and shaped as a big deep box can hold everyone's luggage, upright.

The ride and handling characteristics are one hundred percent Volvo, too: equally smooth, without any loss of feel for the road, and designed to be as steady in an avoidance maneuver as under normal driving conditions. "Not a bad boast," challenged *ROAD & TRACK*, "and one that is, as nearly as we could determine, well justified."

In short, the Volvo GL is a car that makes it as luxurious as possible to embrace economy. Isn't that one way the rich get richer?

*Not available on the Diesel model. †Optional in Canada.



GL

Wagon

Four-cylinder
Six-cylinder Diesel

Half the fun of showing off your new Volvo GL wagon is watching your friends play "Guess how much it costs!"

After they check out your new wagon in detail, confusion and disbelief are understandable.

"The car is an absolute affront to all those who have come to demand and/or expect blandness in utility vehicles," in the opinion of D. K. Hyde-White of *AUTO SHOWCASE*. "Even the interior appointments are out of place."

Norm Going writes, in *THE FLORIDA TIMES-UNION*, "The Volvo might have more straight lines than a shoe box, but it certainly provides exceptional interior room." That's especially true when you realize the GL wagon is exactly the same overall size as the GL sedan, with exactly the same turning radius, too. (Tighter, in fact, than the Porsche 924!) Even with the rear seat up, you still have cargo space that's almost four feet (1.2 metres) long and, yes, at nearly right angles.

The Volvo GL Diesel: an increasingly popular economy option.

Those six cylinders make all the difference in a diesel engine: increasing performance, decreasing noise, and smoothing out vibrations.

Imagine! A diesel *and* a Volvo GL wagon in the bargain. You couldn't ask for more.



Turbo

Two-door sedan Four-cylinder Turbo*
Four-door sedan Four-cylinder Turbo

Automotive writers still find themselves groping for an apt description: "Spectacular." "A blast." "Like cutting in an afterburner!"

According to *CAR AND DRIVER*'s Rich Ceppos, "The turbocharged version of the venerable 2.1-liter B21F four-cylinder engine is enough to transform a pleasant car into one that suggests *joie de vivre*... Actually 'refined' is a word that comes to mind as you wheel the Turbo down the road. Everything seems to work with a fluidity, with a harmony, that's lacking in most other cars. No small detail has been left unpolished.

"The Turbo is one of those cars that just flat feel good to drive. Almost everything about it seems to have been carefully developed. The driving position is a perfect example. The small, padded steering wheel, the pedals, and the shifter all seem perfectly and naturally placed. The chairlike driver's seat, one of the most supportive touring seats in any car, offers an adjustable lower cushion, a lumbar support, and a reclining backrest.

"The controls, too, operate with satisfying precision. The shift linkage is crisp and jewel-like. The clutch take up is velvety and linear. And the steering is sensitive, direct, and accurate.

"The Turbo arrows down the highway, solid and stable. The ride is Mercedes-taut. The body is drum-tight and rattle-free.

"After all these years, Volvo has scioned-out every nook and cranny, and the result is a big sedan that does a whole lot of things well!"

*A two-door GLT sedan is also available in Canada. It has a sturdy B23E, fuel-injected engine—and all the amenities and handling characteristics of Volvo Turbos.



Turbo

Wagon

Four-cylinder Turbo

As *MOTOR TREND* puts it: "You keep hoping for a stray Saab 900 Turbo, or even a BMW you can sniff out, and then send scrambling to the roadside while you blow its doors in."

D. K. Hyde-White adds his perspective in *AUTO SHOWCASE*: "From afar, the Volvo Turbo appears as just another load-up-the-wife-kids-dogs-cats-and-barbecue utility vehicle, but *vis-a-vis*, it becomes apparent that it is indeed a glamorous movie star merely hiding out in working man's clothes. Here I was in a vehicle that is absolutely the antithesis of the sports cars I have come to know and love, and I actually *enjoyed* driving it. Not only that, mind you, but this particular station wagon can be flung around corners more quickly than some British sports cars of the not-too-distant past!"

Of course, part of what Mr. Hyde-White enjoyed is attributable to traditional Volvo design. Like all Volvo wagons, the Turbo's overall size and turning radius are virtually the same as those of the Turbo sedan—very unwagon-like characteristics, to be sure. About that sportscar handling, specifically, the Turbo wagon comes equipped with a small-diameter steering wheel, to quicken the steering response, and a deliberately taut suspension. It's balanced by special front and rear stabilizer bars and runs on five-spoke, alloy rims fitted out with steel-belted radial tires.

Now, on those occasions when you're not out hunting Saabs and BMWs, remember you can also enjoy the practical side of this wagon. "There's a very human amount of space inside the thing," as Larry Griffin points out in *CAR AND DRIVER*, "nice ergonomics, good visibility, and a big, flat floor in the back that lies beneath a skyscaping amount of vertical space. Space for youthful brood, some middle-aged rubber plants, or an aging Airedale!" Most importantly, notes *CROSSROAD*, "beyond the high-tech engine, the bun-warmer driver's seat, the power windows . . . the Volvo Turbo wagon is still a Volvo—strong, heavy, solid, and designed first and foremost to get its owner from A to B for years to come."



ACCESSORIES

As the comparison of standard equipment shows, the Volvo sticker price includes almost everything. Therefore, accessories are a matter of personal preference, not necessity. So your Volvo can be outfitted to serve you better, a complete line of accessories is available from your dealer:

AUDIO SYSTEMS

CR2170 AM/FM stereo cassette, micro-processor AM/FM stereo cassette, front and rear twenty-watt speakers, graphic equalizer...

COMFORT AND CONVENIENCE ACCESSORIES

Cruise control, leather steering wheel, power windows, a variety of monitoring gauges...

WEATHER ACCESSORIES

Air-conditioning, engine block heater, wind deflectors...

SAFETY AND SECURITY ACCESSORIES

Lockable gas cap, lockable wheel nuts, anti-theft alarm, reflector bumper strips...

TOWING, LOAD CARRYING, AND TRAVEL ACCESSORIES

Trailer hitch and wiring harness, a variety of load-leveling systems, steel cargo guard, lockable ski rack, removable or permanent wagon luggage racks...

SEDAN AND WAGON CARE AND MAINTENANCE ACCESSORIES

A variety of protective floor and trunk mats, seat covers, service manuals, touch-up paints, car-care chemicals...

Ask your dealer for an accessory brochure.

A COMPARISON OF STANDARD EQUIPMENT ON THE 1983 VOLVOS

STANDARD EQUIPMENT ON ALL VOLVOS:

INSTRUMENTS

Clock (quartz crystal); fuel gauge; odometer (six-digit); speedometer (85 MPH or 200 km-h in Canada); temperature gauge (coolant); trip odometer.

WARNING BUZZER

Headlights; key; safety belts.

HEATING AND VENTILATION SYSTEM

Twelve-outlet, high-capacity, with four-speed fan.

WINDOWS

Tinted, with dark tint band along top of windshield; electric rear window defroster; front windshield wipers with intermittent cycle; wagons also have rear window wiper.

INTERIOR

Front seats: adjustable bucket seats with adjustable lumbar support.
Rear seats: three-passenger; center armrest.
Seat belts: four three-point, self-adjusting; one lap belt for rear-center passenger.

CARPETING

Full interior, and trunk or cargo area.

DOOR-LOCKING SYSTEM

Centrally controlled (except on certain two-door models) including tailgate on wagons. Child-proof rear door locks.

POWER-ASSISTED BRAKES AND STEERING

ADDITIONAL STANDARD EQUIPMENT BY MODEL

		DL SEDANS (GAS)	DL WAGON (GAS)	GL SEDAN (GAS)	GL WAGON (GAS)	GL SEDAN (DIESEL)	GL WAGON (DIESEL)	TURBO SEDANS (GAS)*	TURBO WAGON (GAS)
DRIVETRAIN	Manual, four-speed, floor-mounted, fully synchronized, with overdrive	●	●	●	●	●	●	●	●
	Automatic, four-speed floor-mounted, with overdrive fourth gear	▲	▲	▲	▲	▲	▲	▲	▲
INSTRUMENTS	Automatic, three-speed, floor-mounted	■	■	■	■	■	■	■	■
	Glow plug indicator					●	●		
	Tachometer			●	●			●	●
	Turbo boost gauge							●	●
	Turbo warning light							●	●
	Oil pressure gauge							■	■
	Voltmeter						■	■	
AIR-CONDITIONING**			▲	▲	▲	▲	▲	▲	
POWER WINDOWS			●	●	●	●	●	●	
WIPERS	Rear window wiper, with intermittent cycle/washer			●	●			●	
MIRRORS	Left remote control, manual	●							
	Dual remote control, manual		●	●	●	●	■		
	Dual electric						●	●	
HEATED DRIVER'S SEAT†		■	■	●	●	●	●	●	
SLIDING STEEL SUNROOF		■	■	●	●	■	●		
PAINTWORK	Enamel	●	●						
	Metallic			■	■	■	■	■	■
	Enamel or metallic			▲	▲	▲	▲	▲	▲
UPHOLSTERY	Cloth, with vinyl trim	●	■						
	Vinyl		●						
	Velour			■	■	■	■	■	■
	Leather				▲	▲	▲	▲	▲
	Velour or leather			▲	▲	▲	▲	▲	▲

● Standard in the U.S. and Canada.
▲ Available in the U.S. only.
■ Canada only.
* Canada only.

**Not standard on models sold in Canada.
†Standard on all Canadian models.
‡Available on some 2-door DL sedans in Canada.
§Not available on 2-door Turbo in Canada.

* Not standard on 2-door DL sedans in Canada.

Where your money goes

For more than 55 years, Volvos have been durable, well-built, great value for the money—but never more so than today. As car prices and interest rates spiral, so do people's expectations about what they should get for their money. In a survey rating new cars for value,¹ a higher percentage of Volvo owners rated their car an excellent value for the money than the owners of 35 domestic and imported makes tested—for the second straight year. Another recent study, by the Roper organization, shows that Americans plan to keep their cars longer than they have in the past. Perhaps this explains why Volvos have set new sales records for five years running, during a time when more than a few auto makers could hardly give rebates away.

I. Durability

At Volvo the beauty of a car must be more than skin deep.

Volvo uses galvanized steel and Zincrometal^{®2} for body parts and key structural members vulnerable to rust.

A hot bath process, galvanizing the 37.7 square feet (3.5 sq. metres) of sheet steel in each Volvo, produces a protective layer of zinc three times thicker than is possible through electro-galvanizing, the less expensive and faster process widely used today.

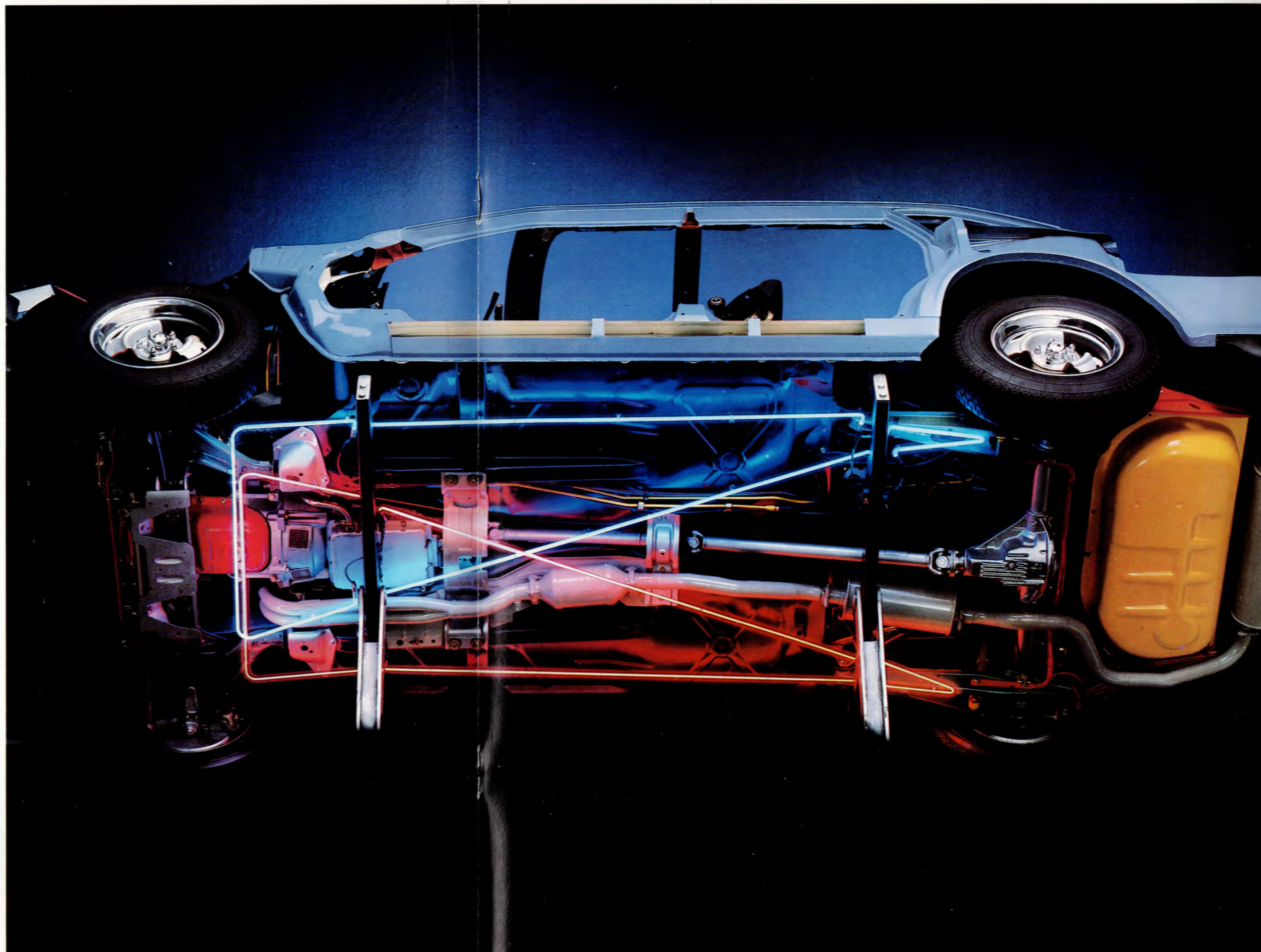
The front fender panels are made of Zincrometal, a rust-resistant sheet steel with a zinc-rich primer baked on. Plastic fender liners in the front wheel housings further protect the panels from dirt, gravel, and the road salts commonly encountered during winter driving. A plastic splash guard protects the engine compartment from dirt and salt spray, too.

Over 4,000 spot welds help keep joints from becoming targets for rust.

To minimize rust-prone joints, Volvos are assembled from the largest possible body panels. Spot welds, each strong enough to support the weight of the entire frame, fuse the panel assembly together. Special equipment helps ensure that the body parts fit together properly.

¹ Sept. '80 New Car Buyers survey conducted by Beta Research in the U.S.

² Zincrometal is a registered trademark of the Diamond Shamrock Corporation.



Every inch of the Volvo receives anti-corrosive protection.

The floor, for example, gets a coat of abrasion-resistant polyester paint, then a thick asphalt-compound coating, which also reduces road sound.

Rust-proofing oil is sprayed onto the engine's underside, the axles, the suspension. During assembly, Volvo sprays a penetrating anti-corrosive gel into the closed body sections, the roof pillars, the doors, the rocker panels.

Volvo bodies receive a four-coat paint process above the beltline, a five-coat process below.

Because the paint below the beltline—the lower half of the doors, the door sills and rocker panels—is especially susceptible to chipping, the area is sprayed with wet-on-wet layers of polyester paint. The resilient polyester undercoats help prevent the final coat of paint from chipping. Door sills, rocker panels, and the underside of the floor are also sprayed with a polyester abrasion-resistant paint.

Slipstream ventilation of the door sills is another unusual rust-preventive feature.

Used by Volvo for over a decade, this process helps prevent moisture from collecting in the cowl air intake and inside the doors, two areas prone to rust. When rain or wash water enters the air intake, it flows downward through the bulkhead and out through holes drilled in the bottom of each door sill. When the car is moving, air flowing through the intake helps evaporate residual moisture.

The Volvo body design eliminates unnecessary enclosures and crevices where moisture and dirt collect.

Door latches have built-in drains: water that runs in, runs out. The trim is expensive rust-proof stainless steel; the front grille, chip-resistant ABS plastic. The exhaust system is partially aluminized to resist rust. The brake pipes are made of a special alloy, stronger and more rust-proof than pure copper.

Volvo's attention to detail goes on and on. . . .

II. Performance

Volvo engines provide power to spare, not to waste.

During the 1950s and 60s, when the name of the game with most auto makers was horsepower, Volvo main-

tained that horsepower alone didn't produce high performance, and it certainly didn't promote fuel economy. As usual, time has borne us out.

The engines in Volvo models deliver more torque, not just unbridled horsepower, over a wide range of speed—so that you can enjoy better performance and efficiency, from initial acceleration on through high-speed passing situations.

Since many technical variables are involved in Volvo's performance equation, our engineers assume the responsibility for matching engines with models.

The B23F (U.S. only)

Represents the newest evolution of the venerable B21F four-cylinder engine. You'll find this engine under the hood of all gasoline-powered DL and GL sedans and wagons. With an eye still on the fuel gauge, the B23F exhibits an increase in horsepower and torque, over the B21F.

The cross-flow cylinder head improves engine performance by providing a free flow of exhaust gases; the design helps to localize heat from the exhaust manifold, which helps to cool the engine more rapidly. The overhead cam activates the in-line valves directly, eliminating push rods and rocker arms, and thereby reducing internal vibration and wear. The B23F is designed to be rugged, dependable, and capable of delivering plenty of power without squandering fuel.

The D24

The engine Volvo uses in the GL diesel sedans and wagons would please Rudolf Diesel himself. It successfully overcomes the disappointments of standard four- and five-cylinder diesels. "Swirl chambers" in the cylinder heads reduce noise, and the swirling air patterns they create ensure a rapid and thorough mixture of air and fuel. The in-line, six-cylinder configuration makes the D24 well-balanced.

a.
The sheet steel in every Volvo is galvanized through a hot bath process as part of Volvo's constant effort to defeat rust.



The B21F-Turbo

A turbocharger boosts the B21F engine's high performance, with a 30-percent increase in torque over the unboosted engine running at the same rpm. The energy of the exhaust gas is used to drive a turbine mounted on the exhaust manifold. The turbine drives a compressor, increasing the pressure of the air and fuel mixture to the engine. In other words, the 2.13-liter B21F engine modified with the turbocharging unit performs like a 3-liter engine. The additional burst of power is reserved for mid-range speeds—to help you get into fast-moving highway traffic, for example, and to take hills with impunity. And, comments *CROSSROAD*, "The nice thing about the turbocharger is that you don't have to pay the fuel price for performance when you don't need performance."

To protect the boost pressure, avoid pre-ignition, and protect the engine, an integrated "wastegate" allows excess exhaust to by-pass the turbine. Engine modifications include a newly designed piston (reducing the compression ratio to 7.5:1), a modified camshaft with sodium-cooled exhaust valves, a new intake manifold and exhaust system, and a new air filter (to increase the air flow). The result is impressive. And surprisingly quiet.

The B21AO (Canada Only)

Volvo has developed a specially-tuned 2.1 litre four-cylinder for the Canadian DLs. Its single side-draught carburetor and compression ratio help to make the B21AO economical. Its high torque at low engine speeds is important for towing or driving in hilly terrain.

The B23E (Canada Only)

The four-cylinder engine in the Canadian GLT 2-door sedan and in GL models provides impressive performance. This 2.3 litre fuel-injected power-plant features an engine block with a large bore, high compression and a high-lift camshaft. The cylinder head has a "cross-flow" design which helps promote rapid cooling and provides a free flow of exhaust gasses. The valves are in-line, actuated directly by the over-head camshaft.

Superior fuel distribution systems are standard on all gasoline-powered Volvos.

Volvo's sophisticated fuel injection systems automatically regulate the flow of fuel and the air-to-fuel combustion

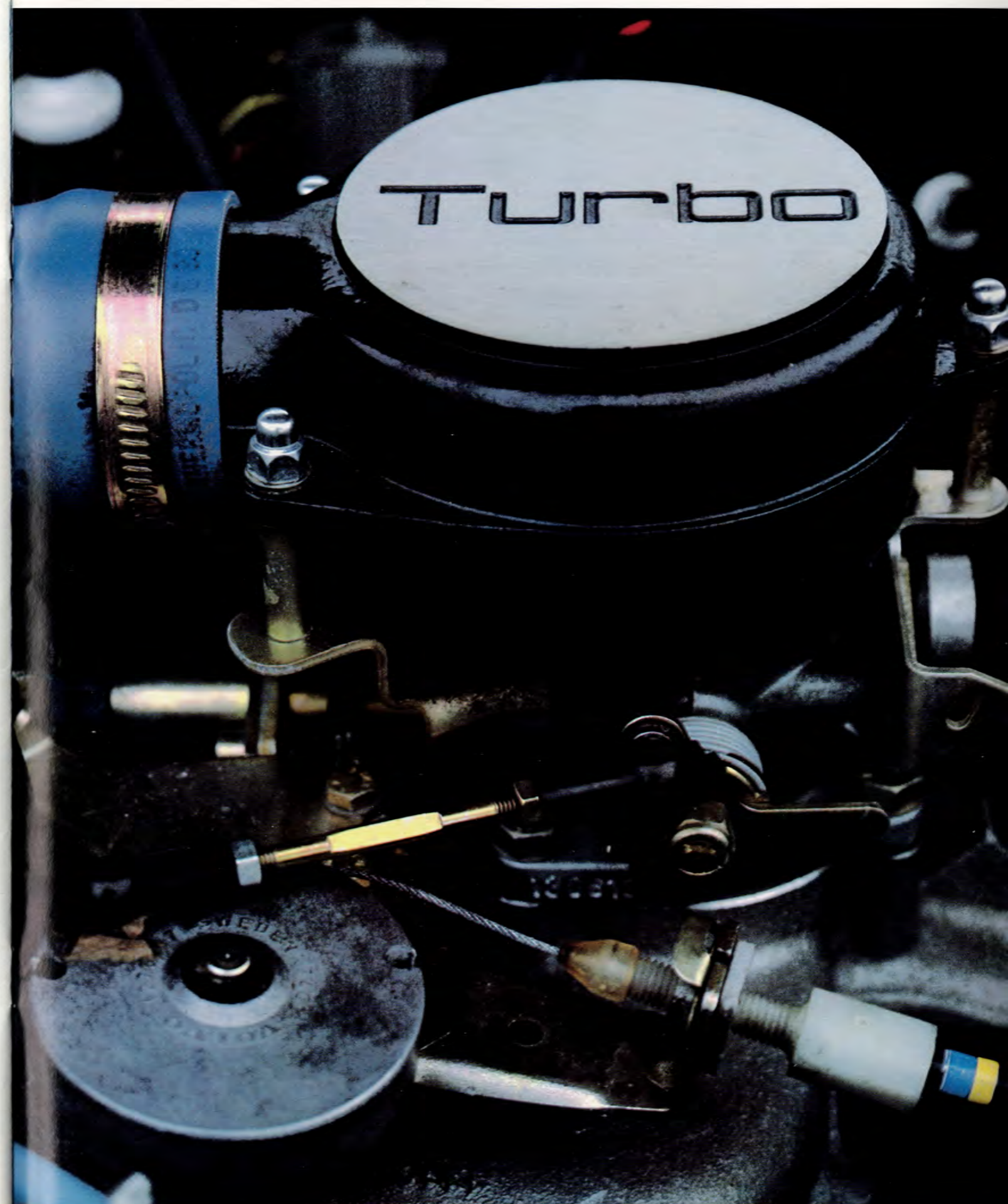
mixture as changes occur in the volume, temperature, humidity, and barometric pressure of incoming air. Because our fuel injection is so precise, Volvo engines now offer better fuel economy, greater horsepower, faster warm-up, and cleaner exhaust than they ever have before. Canadian DL models have an economical engine with a single side-draught carburetor.

The choice of a manual or an automatic transmission is yours.

Volvo's fully synchronized, four-speed manual transmission has first and second gear ratios designed for powerful acceleration, hill-climbing or trailer pulling, and prolonged engine and clutch life. Those who are wary of a manual transmission should be encouraged by Patrick Bedard, a writer for *CAR AND DRIVER*: "The takeup in a Volvo clutch is so silky and so gradual. And the effort drops off in such a marvelously linear fashion as you let out the pedal. (If you ever have to teach (someone) how to drive a stick shift, this is the car to do it in. (It's) easier than tangoing on Arthur Murray's footprints... in the whole car kingdom, no other works half so well!"

The overdrive that comes with the Volvo manual transmission is easier to use than a true fifth gear. Overdrive engages at the push of a button, lowering the engine's rpm, reducing noise, and increasing fuel economy. When it's necessary to drop back into fourth (for power to pass or climb hills), simply push the button again. Down-shift below fourth gear automatically disengages the overdrive, so the driver doesn't have to remember it before shifting back up.

On the other hand, if you choose Volvo's automatic transmission, you'll be impressed with its quiet performance, and its smoothness through the gears. Acceleration through the lower gears is set for a wide range of speed, eliminating the sluggishness often associated with automatics. When you need *extra* acceleration, additional pressure on the accelerator automatically shifts the transmission to the next



b.
Volvo Turbo's additional burst of power at mid-range speeds will get you into fast-moving highway traffic with impunity.

lowest gear. A four-speed automatic with overdrive fourth gear is available on all Volvos with four-cylinder engines.* Above 25 mph (40 km-h) this transmission automatically shifts into overdrive, to help increase fuel economy and decrease engine wear by reducing engine revolutions at cruising speeds.

The Volvo Lambda Sond® emission control system has been acclaimed as the most significant break-through ever achieved in the fight to obtain clean cars.

Lambda Sond is standard equipment on all gasoline-powered Volvos.* Its introduction earned Volvo the Award for Excellence in Air Pollution Control from the National Environmental Industries Council.

The challenge was to find a way to control the three major air pollutants: carbon monoxide, hydrocarbons, and oxides of nitrogen.

Using an unusual substance called zirconia, developed by the NASA space program to detect the presence of oxygen, Volvo engineers produced a sensing device that detects the oxygen in the engine's exhaust gases. It works as an on-and-off switch, telling the engine to run a leaner or richer air-to-fuel ratio, and thereby maintaining the proper degree of oxygen in the exhaust gases, so that the converter functions efficiently.

Another obvious advantage of the Lambda Sond system is that it eliminates the loss of power and fuel economy usually associated with emission control systems.

III. Handling

By design, Volvos are eminently controllable cars.

Many cars that are relatively easy to control under ideal weather and road conditions become difficult to control in a moment of panic. Volvos, on the other hand, are designed to respond to your reactions in a crisis just as they respond to your actions under normal driving conditions.

A number of components and inter-related systems combine to give the Volvo its distinctive handling characteristics.

Power-assisted rack and pinion steering is standard on all Volvos. Volvo

engineers believe it is one of the most responsive and reliable steering systems that can be built into a car.

Fewer moving parts account for its reliability. Its responsiveness gives you a consistent feel for the road.

Volvo engineers rejected full power steering in favor of power-assisted steering. Turning your Volvo in its tight, 32-foot-2-inch (9.8 metres) turning circle is almost effortless, yet the car's response to your steering commands is not diminished. When you move the wheel, you move the car.

The Volvo deliberately understeers slightly when you go around a curve. This forces you to follow your natural instinct and continually keep the car moving into the curve. A car that oversteers tends to move the front end into a curve too quickly—a tendency most drivers can't always control, especially when the road is wet or icy.

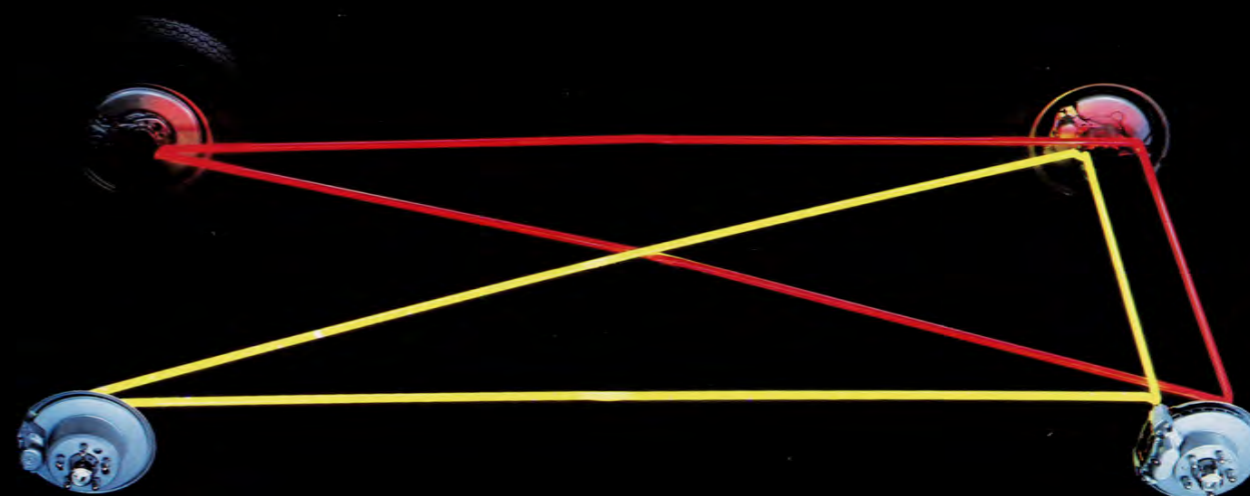
The Volvo suspension gives the driver precise steering control, but doesn't sacrifice comfort.

All the suspension components complement one another—and the steering and braking systems, weight distribution, and engine performance as well. The Volvo ride is a delightful compromise between what people think of as typically European (stiff), and typically North American (buoyant).

Each front wheel is independently suspended by a McPherson strut, an ingenious device that incorporates a coil spring and a shock absorber into one unit. Your Volvo is designed to respond immediately to your steering commands, and doesn't sway its way between lanes or around corners.

In back, Volvo engineers have selected a "live" rear axle to do the job of keeping the rear wheels on the road at the same angle. As a result, Volvo's road-holding ability remains as consistent as possible in all driving situations.

In addition, front and rear stabilizer bars counteract the normal tendency of all cars to lean as they corner, but without stiffening the ride on the straightaway.



c.
Volvo's standard power-assisted rack and pinion steering lets you turn the car almost effortlessly, but without turning your steering commands to mush: when you move the wheel, you move the car.

d.
Volvo's disc brakes—unlike any others sold in North America—come with Volvo's pioneering dual triangular split brake circuit system. One circuit alone provides about 80 percent of the braking power of the whole system.

*Available only on Turbo models in Canada.

All Volvos have power-assisted disc brakes on all four wheels.

Braking depends upon friction, and friction generates heat that in a panic stop can weaken, distort, or burn out conventional drum brakes. Volvo's large disc brakes absorb heat and then cool off, substantially reducing the loss of effectiveness (brake fading) that can occur after repeated hard stops. Also, disc brakes spin water off quickly, so they tend to be more effective than drum brakes in rainy weather.

Volvo GLs and GLTs are equipped with a "spoiler," a device extending below the front bumper that increases road traction aerodynamically by decreasing the amount of air that flows under the moving car. The front disc brakes on wagons, Diesels and Turbos are *ventilated*.* The discs themselves are thicker, with ventilation slots cast through their centers, creating four cooling surfaces to dissipate heat.

Volvo engineers prefer power-assistance to full power brakes. You graduate the degree of pressure on the brake pedal, rather than having to control *full* power brakes that can barely be touched. In addition, special valves in the Volvo brake circuit proportionately modify the hydraulic pressure on the rear brakes. This modification helps prevent premature rear-wheel lock, the principal cause of loss of control during a hard stop.

Volvo's disc brakes have a dual triangular split brake circuit system, and a stepped-bore master brake cylinder.

In a relatively simple and inexpensive brake circuit system, if the front brake circuit fails, the braking effectiveness of the rear circuit can drop 70 percent, or more!

In the dual triangular system Volvo has pioneered, each brake circuit simultaneously and independently serves both front wheels (the ones that do most of the braking), and one opposite rear wheel. Should one system fail, the other provides about 80 percent of the braking power of the whole system.

Volvo's stepped-bore master brake cylinder lends additional integrity to the dual brake circuit system. If one circuit fails and the brake fluid chamber drains, the master brake cylinder will sustain the pressure in the remaining brake circuit, enabling you to stop the car with a nearly normal amount of pressure on the brake pedal.

*Canadian Diesels, the GLT and Turbo models have ventilated front disc brakes.

For better traction, all Volvos have steel-belted radial tires mounted on wide-based rims and centered on lathe-turned hubs.

The radials on every Volvo have steel belts, an especially wide surface area, and tread that stays open for better grip when cornering on wet pavement.

The use of wide-base rims makes it possible to select more efficient, better running, wide-base radials. And, to make tire alignment less of a problem, Volvo rims are centered on lathe-turned hubs for precise fit and true running.

Volvo engineers try not to leave anything to chance.

IV. Ergonomics


Because in every Volvo form follows function, every Volvo is a study in ergonomics—the science of making machinery more comfortable and more efficient for people to use.

All cars have doors. But Volvos have doors for grown-ups—to open, to pass through, and to close.

Volvo doors are squarish, instead of being big, long rectangles. (They don't weigh a ton, either.) And they open wide—to an angle of nearly 80 degrees. The height of the Volvo and the height of its seats further complement the size of the door opening: you can get in and seat yourself without feeling like you're falling on the ground. What's more, you won't get tangled in a shoulder harness when you climb into the back of the two-door Volvo—our system is neat, simple, and out of the way.

Anyone who spends a moment sitting inside a Volvo is impressed by how much room there is.

Room for your head, shoulders, arms, legs; room for long-distance comfort, whether you're driving or just going along for the ride. Even in the back seat there's room for an average-sized adult to assume the normal sitting position: no knees tucked under chin.



The big, deep, box-like trunk of the Volvo sedan holds the luggage for a carload of people, upright.

The famous Volvo front seats adjust to accommodate almost every conceivable human shape and size in an anatomically correct position.

Volvo owners will talk your ear off about their front seats.

The comfortable driver is better able to maintain constant control—especially on a long trip, when any car can become dangerous if the driver feels discomfort or fatigue.

Rich Ceppos of *CAR AND DRIVER* describes Volvo's seats as "front seats that all cars ought to have."

With the help of orthopedic surgeons, Volvo engineers have conducted intensive research into the type of spinal fatigue that is greater when people sit than when they stand. As a result, Volvo has created the perfect marriage of comfort and safety: seats that adjust to accommodate almost every conceivable human shape and size in an anatomically correct position—and in comfort.

The front seats slide back and forth to lock in any one of several positions (one every half inch). Levers adjust the height and angle of the driver's seat nine different ways. The front passenger's seat may be similarly adjusted by resetting a few bolts. The backrests can be adjusted to any angle between 90 and 170 degrees, to help achieve the perfect driving position. (Somewhere between 110 and 130 degrees is considered to be the least fatiguing.) When the seat is fully reclined, there's no ridge between the backrest and the seat cushion.

The seat cushions and backrests provide proper thigh support without restricting your blood flow, a restriction that often causes one or both legs to "fall asleep." The backrests are dished to hold your upper body in place as the car corners.

Adjustable lumbar support in each backrest—a component pioneered by Volvo—eases pressure on the spine, the cause of back tension and driver fatigue.

Head restraints are permanently fixed into the seat frames at the proper height to help reduce the possibility of whiplash. They are "see-through" as well, so they don't create blind spots to block your view.

What about the back seat? Unusually comfortable. The broad base is a thick cushion of cold-formed polyurethane foam; flexible but firm. A center armrest is standard equipment. The sides of the back are contoured for passenger comfort while the car corners.

Your Volvo and its instrumentation are designed not to get in your way.

Volvo engineers apply the laws of ergonomics to every part of every Volvo.

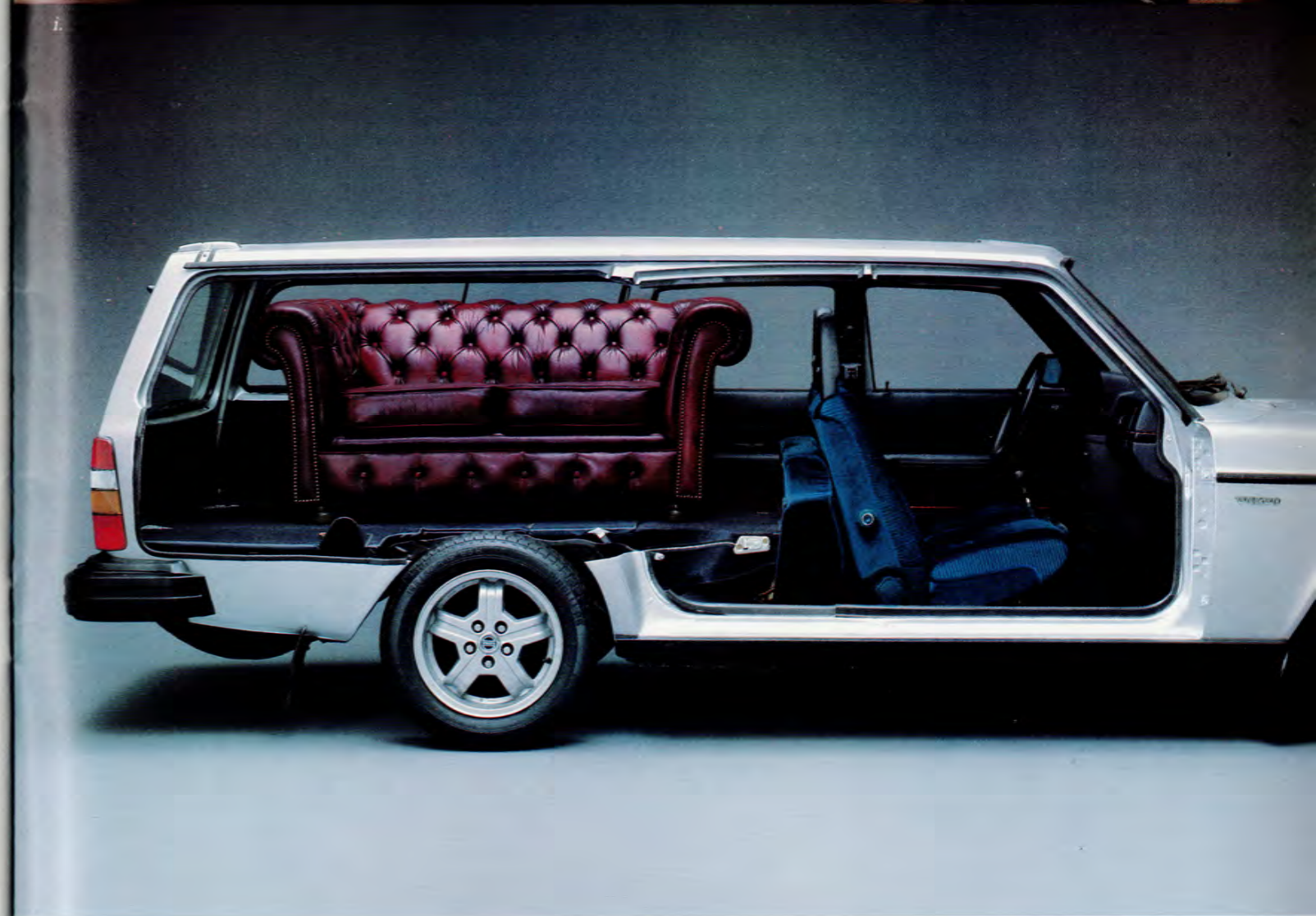
That's why the steering wheel is positioned at a 23-degree angle: studies indicate that this angle gives the driver maximum knee room and a natural, firm grip on the wheel.

To reduce muscle tension and provide a more stable driving position, Volvos have a *left* foot rest, so both the driver's feet can be comfortably positioned on a similar plane.

To improve defensive driving, Volvo sedans and wagons have excellent *all-around* visibility from the driver's seat. The front door pillars, for instance, are no wider than the distance between your eyes; you look through them, in effect, not around them. All glass is tinted, with a darker tint-band along the top of the windshield to reduce glare. A prismatic day/night rear view mirror is standard. Two anti-glare side mirrors are standard on most Volvos.

A good driver monitors the car's instruments frequently. By studying these eye movements, Volvo engineers have determined an instrument configuration and layout that gives the driver the most information and control, without drawing attention from the road more than is necessary. Accordingly, you can operate the Volvo's turn indicator, headlight dimmer, and windshield wiper/washer without taking your hands off the steering wheel. All dials, gauges, and switches are easy to read, day or night, and are easy to reach.

A twelve-outlet ventilation and heating system distributes air rapidly, evenly, and quietly. The assist handles over the doors, the door handles, the window winders (in Volvos without power windows), the lighted seat-belt console, the lighted glove-box, the trunk light—these are among the myriad unobtrusive, instantly accessible, and just plain functional ergonomic details in every Volvo. More reasons why Volvos are cars people swear by—not at.



h.
Volvo's instrument configuration gives the driver information and control without drawing attention from the road more than is necessary.

i.
Fact: the nearly square shape of the Volvo wagon carries more odds and ends (or a six-foot sofa) than any other wagon.

V. Safety

Volvo engineers were committed to researching and improving automobile safety long before it was required by law — let alone fashionable.

By the time legislators and manufacturers woke up to the importance of auto safety, Volvo had become the model to emulate.

Certain Volvo features—the steering, braking, and suspension systems—help you maneuver your way out of trouble. A variety of other features are designed to help protect you when you can't avoid an accident.

An all-steel, spot-welded unitized body provides the foundation for Volvo's passenger safety.

A conventional auto body is a massive, heavy frame with a body shell bolted onto it. Unfortunately, what you end up with is a strong frame, but not necessarily a strong body.

In Volvo's unitized body, the frame and shell are spot-welded together rather than bolted, to form a single, stronger, lighter-weight unit.

The unitized body creates a kind of cage that surrounds Volvo passengers on all sides.

Hollow steel profiles help maintain the integrity of the passenger compartment during a collision. In the early 70's, Volvo dramatized the strength of the cage's roof pillars alone by stacking six Volvo sedans on top of a seventh, without causing a trace of structural damage to any one of them. . . .

Tubular steel bars help bolster passenger protection where it's needed most—in all Volvo doors.

The doors are securely braced by a patented process. A wide beam welded to the floor, and a cross-panel behind the rear seat backrest, further increase resistance to impact from the side.

Front and rear "crumple zones" enable the Volvo to absorb impact and help reduce the possibility of injury to passengers.

Special patterns stamped into the sheet metal skin and structural framework create areas designed to give themselves up in the event of a crash. As they give way, these front and rear crumple zones help absorb the force of an impact rather than transmitting it all to the passenger compartment. (Part of the front crumple zone also directs the engine down under the floor, away from the passenger compartment.)



Front and rear "crumple zones," special patterns stamped into the sheet metal and structural framework of the Volvo, are designed to absorb impact by "giving themselves up" in the event of a crash.

The crumple-zone concept has also been applied to the Volvo steering column: the column offers several stages of protection, depending upon the severity of the impact.

In a minor collision, the large and heavily padded hub in the center of the steering wheel will help protect the driver. However, if the driver is thrown hard against the steering wheel, it is designed to align with the driver's body. A crumple zone in the wheel anchorage helps spread the force of the impact over a wider area. If the impact is greater still, the upper section of the steering column is designed to collapse away from the driver. A special slip-coupling disengages, allowing the column to telescope down into a sleeve convoluted to permit a controlled collapse. In the most severe front-end collision, the lower end of the column is designed to fold as a penknife, pulling the upper part of the column and the wheel forward and down, away from the driver.

The location of the fuel tank helps protect it from damage, if your Volvo is rear-ended.

The Volvo fuel tank is close to the rear axle, completely separate from the trunk floor and the passenger compartment. Special impact members added to the body frame create a safety zone around the fuel tank and, in a severe rear-end collision, force the rear axle forward, reducing the possibility of a fuel tank rupture.

For additional safety, the filler pipe is near the rear wheel, and incorporates two bellows-like joints that give upon impact, reducing the risk of a fuel leak.

Volvo was the first auto maker to introduce the laminated glass windshield as standard equipment—in 1959.

Using mannequin passengers in high-impact tests, Volvo has since demonstrated the importance of the laminated glass windshield as a safety feature. Its flexibility also helps minimize damage from flying stones and other road hazards.

Volvo was the first auto maker to introduce three-point seat belts as standard equipment—in 1959.

Even though Volvo's energy-absorbing front end may slow down the car during a collision, it does not slow down your body momentum. Statistics have proven that it's worthwhile to buckle on a seat belt to keep yourself from

flying forward into the windshield. Volvo's three-point seat belts with patented slip-joint anchors help hold you back in your seat while they spread the force of your forward momentum evenly across your body and pelvic bone. Fitted with inertia reels, they are retractable and self-adjusting—easy to put on and easy to wear.

Three-point safety belts for front seats didn't become mandatory equipment on all cars in North America until 1968. Characteristically, Volvo standard equipment also includes three-point seat belts for the two outside rear passengers, though these are still not required by law. (A lap belt is provided for the middle rear-seat passenger.)

So that the belt will fit a young child properly, allowing an even distribution of force, Volvo offers a special accessory cushion that raises the child to the proper height.

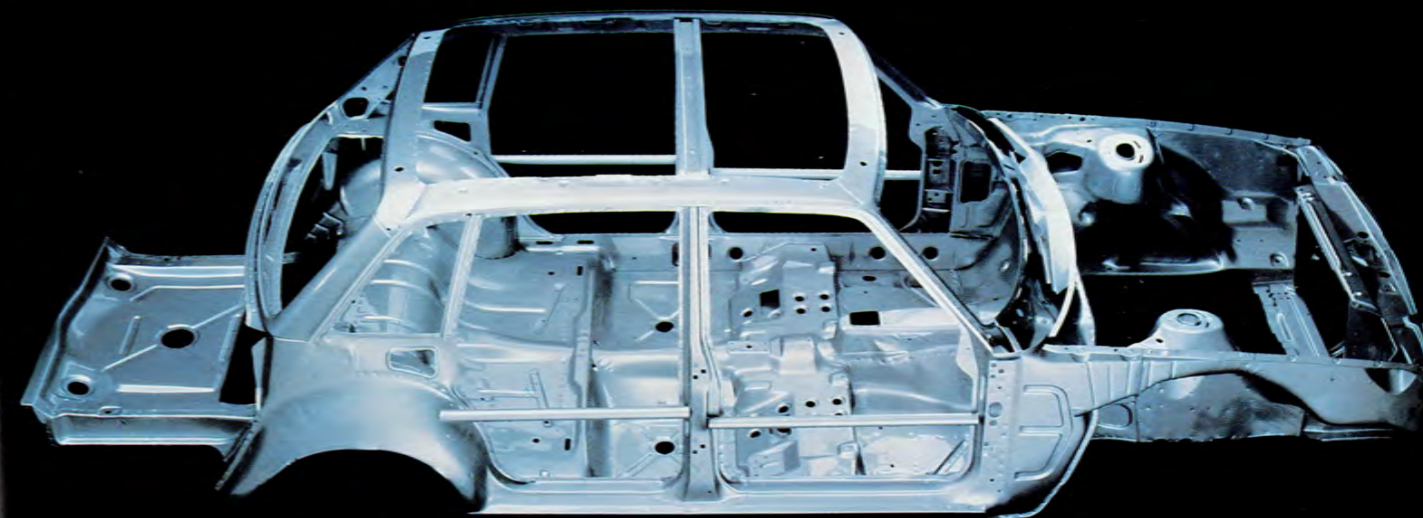
Safety Feature	Volvo Intro- duction	Federal Legal Requirement
Windshield defroster/ defogger (front)	1954	1968
Windshield wipe/wash	1956	1968
Laminated windshield	1959	1968
Padded dashboards	1960	1968
Seat belts	1959	1968
Split-brake system	1966	1968
Seat anchorages	1967	1968
Head restraints	1968	1969
Stepped-bore master brake cylinder system	1975	none

When all is said and done, the most important things that go into Volvos are people.

k.
An all-steel, spot-welded, unitized body—the foundation for Volvo's passenger safety—creates a kind of cage that surrounds passengers on all sides.

l.
Tubular steel bars in all Volvo's doors further increase resistance to impact from the side.

m.
The design of the body frame and the situation of the fuel tank reduce the chance that the fuel tank might rupture in a severe rear-end collision.



The 1983 Volvos at a glance

DIMENSIONS AND WEIGHTS		
Wheelbase	104.3 in.	264 cm
Overall length	188.8 in. (US)	489 cm (CND)
Overall height,		
sedans	56.2 in.	143 cm
wagons	57.5 in.	146 cm
Overall width	67.2 in.	171 cm
Track, front	56.3 in.	143 cm
rear	53.5 in.	136 cm
Legroom		
Front, all models	39.8 in.	103.5 cm
Rear, sedans	36.6 in.	93 cm
wagons	36.4 in.	92 cm
Headroom		
Front, all models	37.4 in.	95 cm
Rear, sedans	36.6 in.	92 cm
wagons	36.4 in.	93.5 cm
Trunk capacity,		
sedans	13.9 cu. ft.	0.4m ³
Cargo capacity,		
wagons	41.1 cu. ft.	1.2 m ³
Rear seat down	76.0 cu. ft.	2.2 m ³

BODY
Unitized. Central passenger safety cage with energy absorbing front and rear ends. Rust-proofing includes use of galvanized steel in susceptible areas; anti-corrosive coating inside doors, rocker panels, etc.; extensive under-coating and special stone chip resistant paint. Aluminum tailpipe and muffler.

B23F-LH LAMBDA ENGINE: UNITED STATES DL, GL MODELS
In-line four, cast iron block with light alloy "cross-flow" cylinder head. Overhead camshaft. Fuel injection, and closed-loop Lambda Sond® emission control.
Displacement: 141 cu. in.
Compression ratio: 10.3:1
Horsepower, SAE-net: 107 @ 5400 rpm
Torque, ft. lbs., SAE-net: 127 @ 3500 rpm
Sealed cooling system
 automatic: 9.8 qts.
 manual: 10.0 qts.
Fuel tank: 15.8 gallons, unleaded 91 RON

D24-ENGINE: DIESEL MODELS
In-line overhead cam; six-cylinder diesel with indirect fuel injection into swirl chambers.
Displacement: 145 cu. in. 2383 cc
Compression ratio: 23.0:1 23.0:1
Horsepower, SAE-net: 76 @ 76 @
4800 rpm 4800 rpm
Torque, ft. lbs. 98 @ 98 @
SAE-net: 2800 rpm 2800 rpm
Sealed cooling system
 automatic: 9.8 qts. 9.2 litre
 manual: 10.0 qts. 9.4 litre
Fuel tank: 15.8 gallons 60 litres

B21F-T: TURBO MODELS
Fuel injected in-line four; cast iron block with light-alloy "cross-flow" cylinder head. Overhead camshaft. Lambda Sond® emission control. Exhaust-driven turbo-compressor.
Displacement: 130 cu. in. 2127 cc
Compression ratio: 7.5:1 7.5:1
Horsepower, SAE-net: 127 @ 127 @
5400 rpm 5400 rpm
Torque, ft. lbs., SAE-net: 150 @ 150 @
3750 rpm 3750 rpm
Sealed cooling system
 automatic: 9.8 qts. 9.2 litre
 manual: 10.0 qts. 9.4 litre
Fuel tank: 15.8 gallons, 60 litres, unleaded regular 91 RON

B-21AO ENGINE: CANADIAN DL MODELS
Carbureted in-line four; cast iron block with light alloy "cross-flow" cylinder head. Overhead camshaft.
Displacement: 2127 cc
Compression ratio: 9.3:1
Horsepower, SAE-net: 100 @ 5250 rpm
Torque, ft. lbs., SAE-net: 122 @ 2500 rpm
Sealed cooling system
 automatic: 9.2 litre
 manual: 9.4 litre
Fuel tank: 60 litres, premium leaded or premium unleaded 96 RON

B-23E ENGINE: CANADIAN GL AND GLT TWO-DOOR
Fuel injected in-line four; cast iron block with light alloy "cross-flow" cylinder head. Overhead camshaft.
Displacement: 2316 cc
Compression ratio: 10.3:1
Horsepower, SAE-net: 115 @ 5000 rpm
Torque, ft. lbs., SAE-net: 133 @ 3000 rpm
Sealed cooling system
 automatic: 9.2 litre
 manual: 9.4 litre
Fuel tank: 60 litres, premium leaded or premium unleaded 96 RON

ELECTRICAL SYSTEM
12 V. solid-state ignition (except Canadian DL models which are carbureted). 55 amp alternator on all Turbo and diesel models; 70 amp alternator on all other models. (Canada: 55 amp alternator on all models.) 60 amp-hour battery on four-cylinders; 88 amp on diesels.
DRIVETRAIN
Manual: Four-speed fully synchronized transmission. Electrically operated overdrive automatically releases when you shift from 4th to 3rd gear. Gear ratios: 1st, 4.03:1; 2nd, 2.16:1; 3rd, 1.37:1; 4th, 1.00:1; overdrive, 0.80:1. Final drive ratios: B23F-LH Lambda; 3.31:1; D24, 3.54:1; B21F-Turbo, 3.73:1; B21AO, 3.54:1; B23E, 3.73:1.

Automatic: four-speed with overdrive fourth gear; floor-mounted shift lever, with an illuminated PRND21 pattern. Final drive ratios: B23F-LH Lambda, 3.73:1; B21F-Turbo, 3.91:1. Three-speed, floor-mounted shift lever, with an illuminated PRND21 pattern. Final drive ratios: D24, 3.31:1; B21AO, 3.54:1; B23E, 3.54:1.

STEERING SYSTEM
Rack-and-pinion gear. Servo-assist is standard on all models. Turning circle: 32'2" (9.8 m). Turns lock-to-lock: 3.5.

SUSPENSION SYSTEM
Front: McPherson strut incorporating coil springs and telescopic shock absorbers. Stabilizer bar. Turbos have larger-diameter stabilizers and gas-filled shocks. The Canadian two-door GLT has a larger diameter stabilizer and gas-filled front shocks.

Rear: Rigid "live" axle located by longitudinal control arms and torque rods. Lateral location by track rod. Coil springs and telescopic shock absorbers. Stabilizer bar. Turbo sedans have larger diameter stabilizers and gas-filled shocks. The Canadian two-door GLT has a larger diameter stabilizer and gas-filled rear shocks.

Tires: Steel belted radials. U.S. DL sedans, 175/R14; GL sedans, 185/70R14; DL and GL wagons, 185/R14; Turbo sedans and wagons, 195/60R15. Canada: DL sedans and wagons, 185/75R14; GL gasoline sedans and wagons, 185/75R14; GL diesel sedans, 185/75R14; GL diesel wagons, 185/R14; GLT sedan, and Turbo sedans and wagons, 195/60R15.

BRAKE SYSTEM
Self-adjusting disc brakes on all four wheels. Tandem-type power assist. Ventilated front discs are standard on United States Diesels, Turbos and all wagons (Canadian GL diesel, two-door GLTs and Turbo models). Each circuit of the dual triangular split hydraulic brake system connects both front wheels and one rear wheel. Stepped-bore master cylinder maintains nearly normal pedal effort, if one circuit fails. Handbrake operates mechanically on separate rear wheel drums.

VOLVO
The factory reserves the right to make changes at any time, without prior notice, in prices, colors, materials, standard equipment, specifications, and models; also, to discontinue, introduce or supersede models. The bumpers shown on DL's are standard on all models in Canada. GL and Turbo models depict bumpers standard on all U.S. DL/GL/Turbo models. The quotes in this brochure may refer to 1982 Volvos or to earlier models.

