

VOLVO

DL, GL, Turbo



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...

Rich Ceppos,
Car and Driver

DL

Sedan

"Volvo has a well-deserved reputation for being well-built: even the basic models are solid. Slam the door and the DL sedan echoes the solid sound of a \$45,000 Mercedes." Norm Going, The Florida Times-Union



Now that Americans are demanding cars that won't have to be traded in every few years, many car makers are rushing to oblige them. But building cars that will last a long time isn't a task to be accomplished quickly. Volvo engineers have devoted themselves to it for decades. Recent findings indicate the degree of their success: a Volvo's life expectancy on American roads is one-third longer than the average for all other cars.¹

When you consider that the average person these days works a full year to earn enough to buy a new car,² common sense requires that you know what you're getting for your money.

Here's what you get with a Volvo—*any* Volvo.

For body parts and key structural members vulnerable to rust, Volvo uses galvanized steel and Zincrometal.³

Instead of the widely used electrogalvanizing process, Volvo uses a hot bath to galvanize the 37.7 square feet of sheet steel in each car.

This produces a protective layer of zinc three times thicker than is possible by electrogalvanizing.

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.

For precision, rust prevention, and the elimination of squeak- and rattle-prone bolts, the basic structure of the Volvo is robotically welded together with more than 4,000 spot welds.

Each spot weld is strong enough to support the weight of the entire frame!

To ensure an even more durable structure, and further minimize rust-prone joints, Volvos are assembled from the largest possible body panels. In the body-assembly section, special dimensioning equipment automatically measures all the body panels for exact fit.

Every inch of the Volvo receives anticorrosive protection.

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

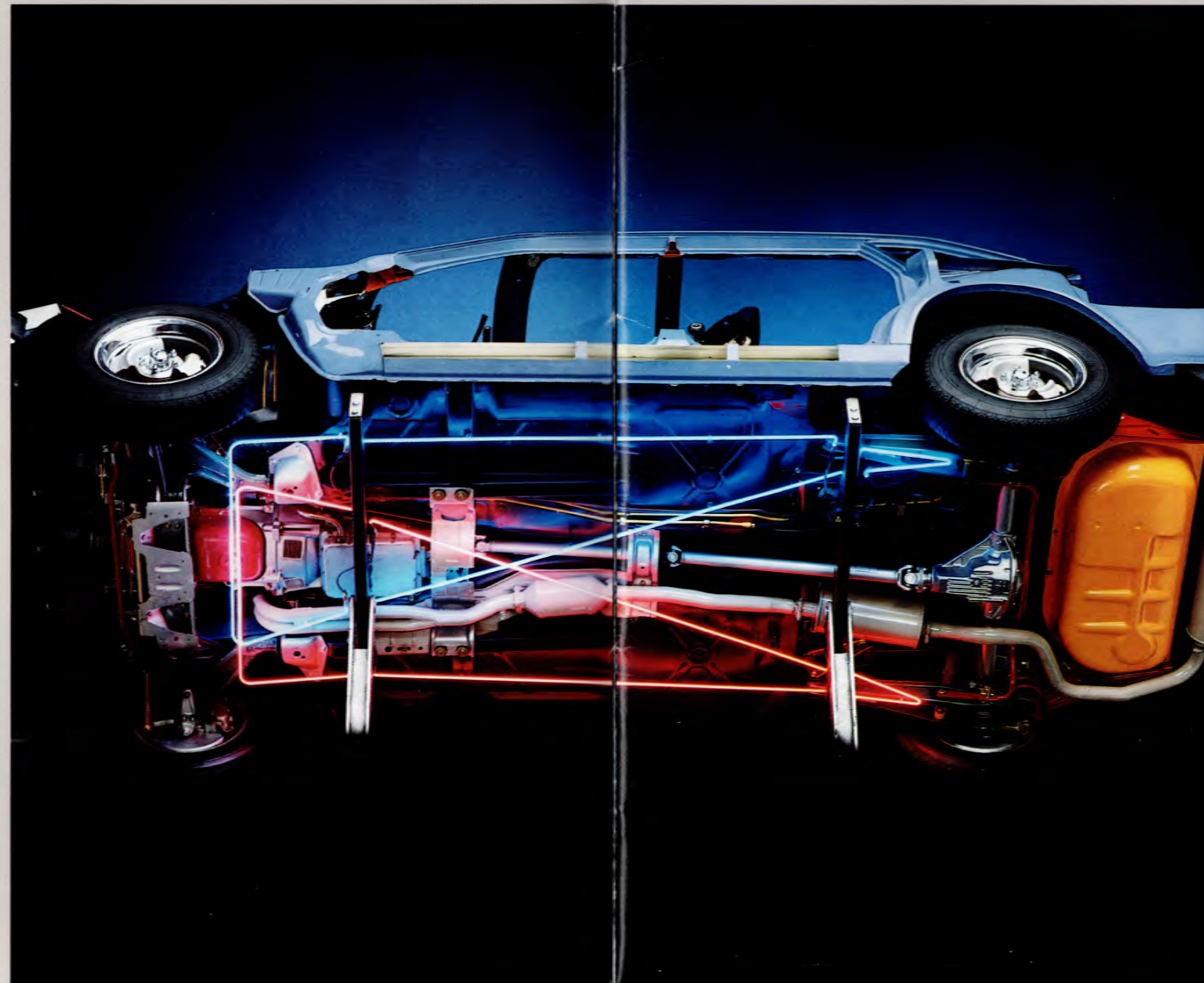
Rustproofing oil is sprayed onto the engine's underside, the axles, and the suspension. During assembly, a penetrating anti-corrosive gel is sprayed into the closed body sections, the roof pillars, the doors, and the rocker panels.

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

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

In Sweden, as at Volvo, strength and durability are serious matters—ranking not too far down the list behind motherhood and ski-touring. That has been the solid foundation upon which Volvo has built an international reputation for mechanical integrity and longevity...

Road & Track



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

¹Analysis conducted by Ken Warwick & Associates, Inc. Based on a comparison of 1981 U.S. registration data for Volvo and for the automobile industry as a whole and not by individual make. Though neither an expressed nor implied warranty, this information is certainly comforting to know.

²Based upon the 1981 average household discretionary income and the average selling price of new cars from N.A.D.A.

³Zincrometal is a registered trademark of Diamond Shamrock Corporation.

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

Slipstream ventilation, used by Volvo for over a decade, prevents 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 can 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.

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.

In Volvo's unitized body, the frame and shell are spot-welded together rather than bolted, thus forming 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 1973, 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.



DL

Wagon

"If you think of an imported station wagon as embodying Old World quality and limitless practicality, then Volvo is the standard bearer. . . .

Especially when outstanding engineering blesses it with surprising maneuverability and fuel efficiency. And, of course, Volvo durability is legend." Motor Trend's Import Car Buying Guide

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, a cross-panel behind the rear seat backrest, further increase resistance to impact from the side.

Front and rear "crumple zones" enable Volvos 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 fold up like an accordion in the event of a crash. As they crumple up, these front and rear 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.)

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

In a minor accident, the large and heavily padded hub

in the center of the steering wheel will help protect the driver. But, 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 wide 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 convoluted sleeve that permits a controlled collapse. In the most severe front-end

collision, the lower end of the column is designed to fold like 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 collapse on impact, reducing the risk of a fuel leak.

Volvo introduced the laminated glass windshield as standard equipment—in 1959.

Using mannequin passengers in high-impact tests, Volvo has since demonstrated the importance of laminated glass as a safety feature. Its flexibility also helps minimize

damage to the wind-shield from flying stones and other road hazards.

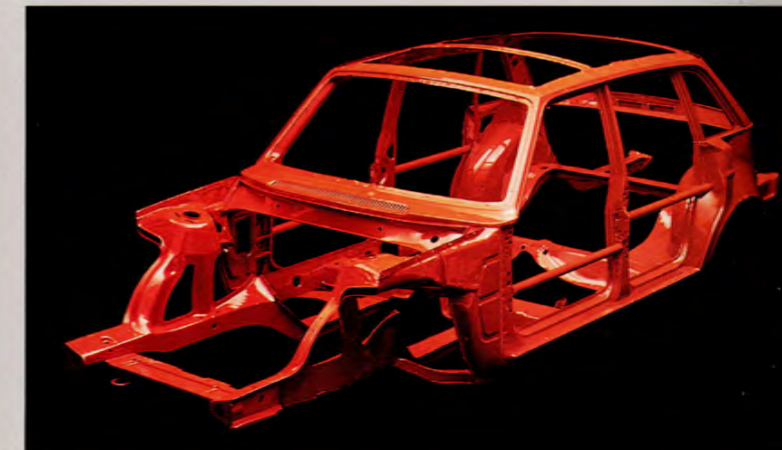
Volvo introduced three-point seat belts as standard equipment—in 1959.

Statistics have proven that it's worthwhile to buckle on a seat belt to keep yourself from flying forward during a collision. Volvo's three-point seat belts, with patented slip-joint anchors, help hold you in your seat while they spread the force of your forward momentum evenly across your upper body and pelvic bone. They are retractable, self-adjusting, and fitted with inertia reels—easy to put on and easy to wear.

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

Mere mention of the name Volvo conjures up images of solidity, durability, refinement, and safety. For good reason too: the company was actively involved in automotive safety long before U.S. legislators even knew what a 3-point harness was, let alone how to fasten one."

Road & Track Buyer's Guide



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

Special patterns stamped into the sheet metal and structural framework of Volvos (crumple zones) are designed to absorb impact forces and to help reduce the possibility of injury to passengers.



Tubular steel bars in all doors help increase resistance to side impacts.

Three-point safety belts for front seats didn't become mandatory equipment on all cars in the U.S. until 1968. Volvo standard equipment now characteristically 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.

Many cars that are relatively easy to control under ideal weather and road conditions may become difficult to control in an emergency.

Volvos, on the other hand, are eminently controllable,

designed to respond to your reactions in a crisis just as they do under normal driving conditions.

Front-wheel drive cars are enjoying a recent vogue, but Volvo's engineers believe that superior durability, reliability, and handling are inherent in the simplicity of rear-wheel drive. The makers of virtually every car in the world today

that's renowned for handling—Ferrari, Porsche, Corvette, and all Indy and Formula 1 racers—agree.

Power-assisted rack and pinion steering is standard on all Volvos. Volvo engineers believe it to be the most responsive and reliable steering system that can be built into a car.

Fewer moving parts account for its reliability. Its responsiveness gives you a consis-

tent feel for the road. "As it should," says *Motor Trend*, "the wheel acts as a two-way transmitter of signals. The driver's commands are sent to the front wheels instantly and without wasted motion, and information about tire traction and road texture flows back into the driver's hands."

Volvo engineers rejected full power steering in favor of power-assisted steering. Turning your Volvo sedan or wagon in its tight, 32-foot-2-inch turning circle (tighter than a Honda Accord's), is almost effortless, yet the car's response to your steering commands is unaltered. When you move the wheel, you move the car.

GL

Sedan

"The GL four-door sedan is subtle and understated in its 'luxury,' that is, it should please prospective buyers looking for substance rather than fluff. First class is the best description of the Volvo's quality." Daily Local News, West Chester, PA



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

As *Road & Track* sums up their evaluation: "The amount of power assistance is to our liking, with the steering generating a nearly ideal balance between ease of con-

trol and effort/feedback while parking, mudding about town, or cruising at speed. It is a comfortable car for long-range touring and just as much at home on your favorite bit of twisty blacktop."

The Volvo suspension gives the driver precise steering control, without sacrificing comfort.

The components of the suspension complement one another—and the steering

and braking systems, weight distribution, and engine performance as well. The result is a delightful compromise between what people think of as a typically stiff European ride and a typically buoyant American one.

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

In the rear, 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.

Moreover, 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.

"The handling is excellent," confirms *The Boston Globe's* John R. White. "In the corners and on fast curves the body leans, but the wheels stay put in the track you select—there's no wander."

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

Braking depends on 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 (fading)

that can occur after repeated hard stops. And since disc brakes spin water off quickly, they tend to be more effective than drum brakes in rainy weather.

Volvo engineers prefer power-assistance to full power brakes. You can apply gradual pressure to the brake pedal rather than having to control *full* power brakes that can barely be touched without locking. Also, special valves in the Volvo brake cir-

cuit proportionately modify the hydraulic pressure on the rear brakes—a modification that helps prevent premature rear-wheel lock, the principal cause of loss of control during a hard stop.

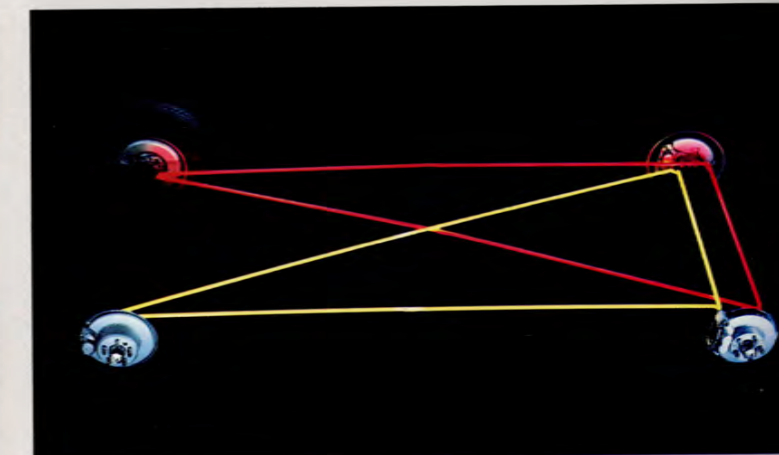
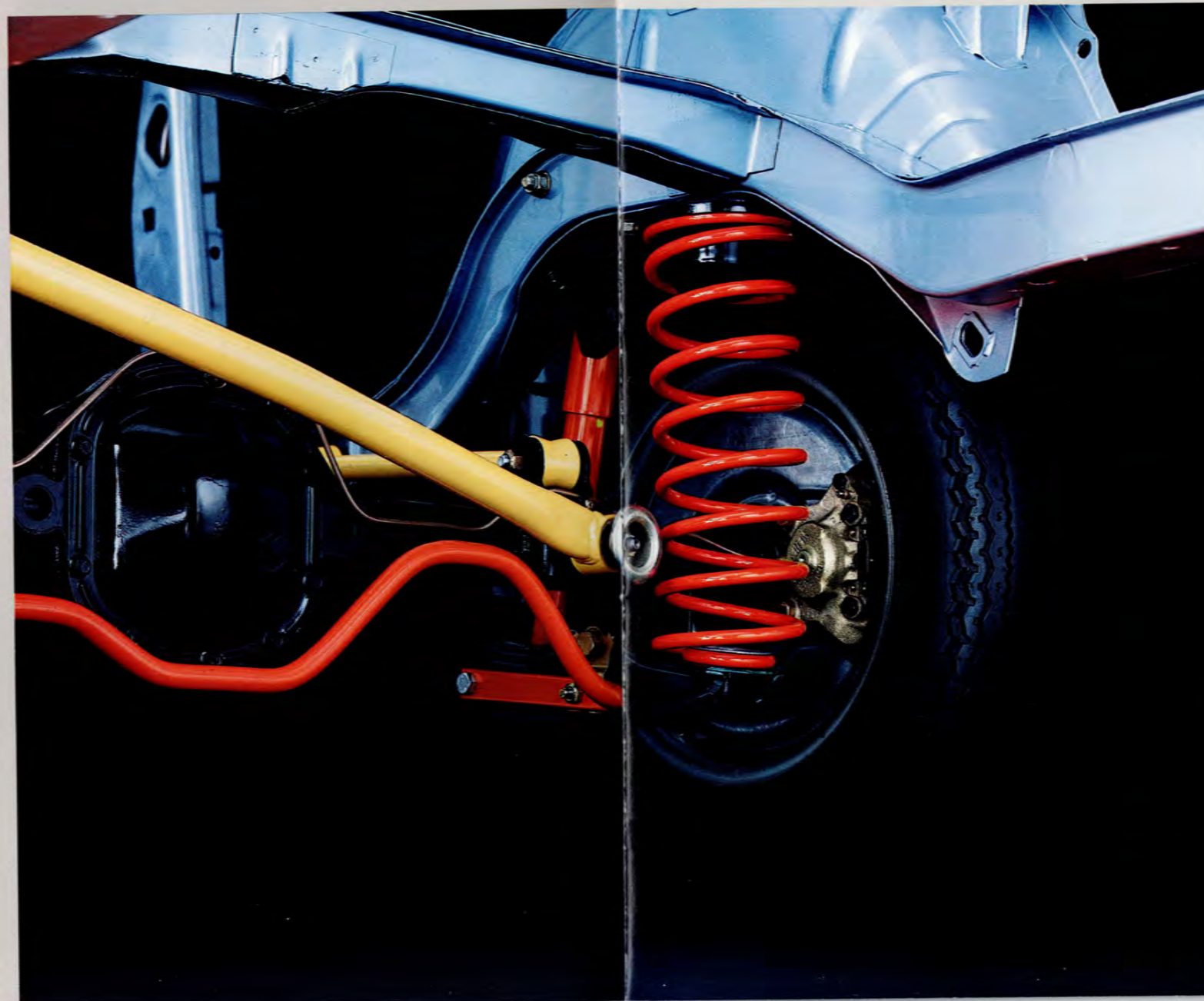
In the opinion of *Cross-Road*, "the braking is as close to perfect for normal street driving as we have ever seen—the power-assisted brakes have the light pedal touch so many drivers prefer, yet resist lockup extraordinarily well. And with disc brakes on all four wheels (along with a set of well-chosen tires), the Volvo's

stopping distances from 60 mph were marvelously short and straight."

Volvo's disc brakes have a dual triangular split brake circuit system, and a stepped-bore master brake cylinder unlike any others sold in North America.

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

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



In Volvo's dual triangular split braking-system, each brake circuit serves both front wheels and one rear wheel.

Volvo engineers selected a "live" rear axle design because it assures constant wheel-to-wheel tracking; constant toe-in, caster and camber wheel angles.

A car you can believe in. Volvo has never been one to follow prevailing automotive fashions. It is therefore interesting to see other car makers adopting decidedly Volvo-like features, and

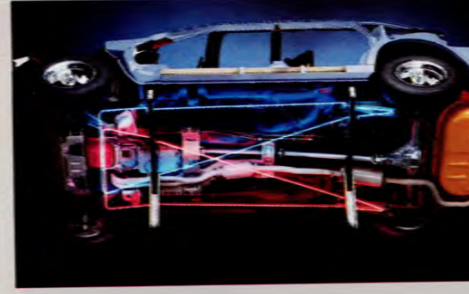
ballyhooing the "quality," "excellence," and "value" of their cars. In the process of buying a car, however, people often find a formidable gap between a well-turned phrase and a well-turned-out car.



The 1984 Volvos at a glance:

Year after year, each Volvo has embodied the essential qualities of the Volvo philosophy: ruggedness, reliability, intelligent design, and superb engineering. Now, you can buy one for what it was never intended to be: a trend-setter.

“Today,” *Time* concurs, “the safe and sensible Volvo has never been more popular. In a year when other auto manufacturers struggling, Volvo’s American sales are up 12.8% and the car has passed Volkswagen as the bestselling European import.”



Standard on all Volvo Models

Dimensions and Weights

Wheelbase	104.3in.
Overall length	188.8in.
Overall height, sedans	56.2in.
Overall height, wagons	57.5in.
Overall width	67.2in.
Track, front	56.3in.
Track, rear	53.5in.
Leg room, front	39.8in.
Leg room, rear, sedans	36.6in.
Leg room, rear, wagons	36.4in.
Headroom, front	37.6in.
Headroom, rear, sedans	36.6in.
Headroom, rear, wagons	36.4in.
Trunk capacity, sedans	13.9cu. ft.
Cargo capacity, wagons	41.1cu. ft.
Cargo capacity, with rear seat down	76.0cu. ft.

Approximate curb weights:

DL two door	2879-2897 lbs.
four door	2910-2928 lbs.
wagon	3034-3051 lbs.
GL four door	2956-2974 lbs.
wagon	3047-3064 lbs.
GL Diesel four door	3084-3111 lbs.
wagon	3175-3201 lbs.
Turbo two door	2992 lbs.
four door	3036 lbs.
wagon	3144 lbs.

Engineering Features

Unitized Body

Central passenger safety cage with energy absorbing front and rear ends. Rustproofing includes use of galvanized steel in susceptible areas; anticorrosive coating inside doors, rocker panels, etc.; extensive undercoating and special chip resistant paint. Aluminum tailpipe and muffler.

Power-assisted Rack and Pinion Steering

Power-assisted rack and pinion gear, 32' 2" turning circle, 3.5 turns lock to lock.

Power-assisted Four-wheel Disc Brakes

Self-adjusting four-wheel disc brakes, tandem-type power-assistance. 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. Hand brake operates mechanically on separate rear wheel drums.

McPherson Front Suspension with Live Rear Axle

Front Suspension has McPherson struts incorporating coil springs and telescopic shock absorbers. Stabilizer bar. Rear Suspension includes a rigid, live rear axle located by longitudinal control arms and torque rods. Lateral location by track rod. Coil springs and telescopic shock absorbers. Stabilizer bar.

Product Features and Equipment

Front spoiler
Halogen high and low beam headlights
Tinted windows, with dark tint band along the top of the windshield
Electric rear window defroster with timer
Integral front side window defoggers
Front windshield wipers with an intermittent cycle
Centrally controlled door locking system (except on 2-dr. DLs) including tailgate or trunk
Power-assisted brakes and steering
Four three-point, inertia reel seat belts; one lap belt for rear-center passenger
Adjustable front bucket seats
Adjustable lumbar support on front seats
Full interior carpeting, including trunk/cargo area
Rear center armrest
Warning buzzer for headlights, key, seat belts
Illuminated, lockable glove box with vanity mirror
Instruments: 120 MPH speedometer, odometer, trip odometer, quartz crystal clock, fuel gauge, temperature gauge
Luggage compartment light

Wagons have in addition:
Rear window wiper/washer
Cargo compartment light
Cargo tie-down rings
Lockable storage compartment beneath the cargo area floor

DL 2-door, 4-door sedans, wagon

Engine In-line four-cylinder B23F-LH Lambda engine with cast iron block, light alloy "crossflow" cylinder head, overhead camshaft, electronically-controlled fuel injection and closed-loop Lambda Sond® emission control.

Displacement:	141 cu. in.
Compression ratio (manual):	9.5:1
Compression ratio (automatic):	10.3:1
Horsepower, SAE-net (manual):	111 @ 5400
Horsepower, SAE-net (automatic):	114 @ 5400
Torque, ft. lbs., SAE-net (manual):	136 @ 2750
Torque, ft. lbs. SAE-net (automatic):	133 @ 3500
Fuel tank capacity (unleaded):	15.8 gallons

Transmissions Manual: Fully synchronized, four-speed with electrically operated overdrive. Gear ratios: 1st, 4.03:1; 2nd, 2.16:1; 3rd, 1.37:1; 4th, 1.00:1; overdrive, 0-80:1. Rear axle ratio: 3.31:1. Automatic (optional with charge): four-speed with overdrive fourth gear; floor-mounted shift lever. Rear axle ratio: 3.73:1.

Tires Low rolling resistance, steel-belted radial tires. Size: sedans, 175R14; wagon 185R14.

Paint and Upholstery Enamel paint is standard; metallic is optional with charge on four and five door models. Sedans have cloth upholstery with vinyl trim; vinyl is standard on wagons.

Additional Standard Equipment Driver's side manually controlled mirror on sedans (dual mirrors on wagons), steel wheels and trim rings, storage pockets on front seat backs and in front doors.



GL 4-door sedan, wagon

Engine In-line four-cylinder B23F-LH Lambda engine with cast iron block, light alloy "crossflow" cylinder head, overhead camshaft, electronically-controlled fuel injection and closed-loop Lambda Sond® emission control.

Displacement:	141 cu. in.
Compression ratio (manual):	9.5:1
Compression ratio (automatic):	10.3:1
Horsepower, SAE-net (manual):	111 @ 5400
Horsepower, SAE-net (automatic):	114 @ 5400
Torque, ft. lbs., SAE-net (manual):	136 @ 2750
Torque, ft. lbs. SAE-net (automatic):	133 @ 3500
Fuel tank capacity (unleaded):	15.8 gallons

Transmissions Manual: Fully synchronized, four-speed with electrically operated overdrive. Gear ratios: 1st, 4.03:1; 2nd, 2.16:1; 3rd, 1.37:1; 4th, 1.00:1; overdrive, 0.80:1. Rear axle ratio: 3.31:1. Automatic (optional with charge): four-speed with overdrive fourth gear; floor-mounted shift lever. Rear axle ratio: 3.73:1.

Tires Low rolling resistance, steel-belted radial tires. Size: sedan, 185/70R14; wagon, 185R14.

Paint and Upholstery Enamel paint is standard; metallic is optional with charge. The sedan has plush velour; leather is optional with additional charge. Leather is standard on the wagon.

Additional Standard Equipment Dual manually controlled mirrors, alloy wheels, power windows, air conditioner, sliding steel sunroof with wind deflector on the sedan, power trunk release (sedan), heated driver's seat, small diameter steering wheel, engine compartment light, interior light delay (on opening or closing one of the doors), tachometer and intermittent feature on the wagon's rear wiper.

GL Diesel* 4-door sedan, wagon

Engine In-line overhead cam, six cylinder D24 diesel engine with indirect fuel injection into swirl chambers.

Displacement:	145 cu. in.
Compression ratio:	23.0:1
Horsepower, SAE-net:	80 @ 4800
Torque, ft. lbs., SAE-net:	103 @ 2800
Fuel tank capacity (diesel):	15.8 gallons

Transmissions Manual: Fully synchronized, four-speed with electrically operated overdrive. Gear ratios: 1st, 4.03:1; 2nd, 2.16:1; 3rd, 1.37:1; 4th, 1.00:1; overdrive, 0.80:1. Rear axle ratio: 3.54:1. Automatic (optional with charge): three-speed, floor-mounted shift lever. Rear axle ratio: 3.31:1.

Tires Low rolling resistance, steel-belted radial tires. Size: sedan, 185/70R14; wagon, 185R14.

Paint and Upholstery Enamel paint is standard; metallic is optional with charge. The sedan has plush velour; leather is optional with additional charge. Leather is standard on the wagon.

Additional Standard Equipment Dual manually-controlled mirrors, alloy wheels, power windows, air conditioner, sliding steel sunroof with wind deflector (sedan), power trunk release (sedan), heated driver's seat, small diameter steering wheel, interior light delay (on opening or closing one of the doors) and intermittent feature on the wagon's rear wiper.

*Diesels are not available in California.

Turbo 2-door, 4-door sedans, wagon

Engine Fuel injected in-line four cylinder B21FT engine with cast iron block, light alloy "cross-flow" cylinder head, overhead camshaft, Lambda Sond® emission control, exhaust-driven turbo-compressor.

Displacement:	130 cu. in.
Compression ratio:	7.5:1
Horsepower, SAE-net:	131 @ 5400
Torque, ft. lbs., SAE-net:	155 @ 3750
Fuel tank capacity (unleaded):	15.8 gallons

Transmissions Manual: Fully synchronized, four-speed with electrically operated overdrive. Gear ratios: 1st, 4.03:1; 2nd, 2.16:1; 3rd, 1.37:1; 4th, 1.00:1; overdrive, 0.80:1. Rear axle ratio: 3.73:1. Automatic (optional with charge): four-speed with overdrive fourth gear; floor-mounted shift lever. Rear axle ratio: 3.91:1.

Tires Low rolling resistance, steel-belted radial tires. Size: 195/60R15.

Paint and Upholstery Enamel paint is standard; metallic is optional with charge. Plush velour is standard on the sedans and the wagon; leather is optional with charge.

Additional Standard Equipment Dual power mirrors, special front stabilizer, special rear stabilizer on sedans, special gas-filled front shock absorbers, special gas-filled rear shock absorbers on sedans, alloy wheels, power windows, air conditioner, sliding steel sunroof with wind deflector on sedans, power trunk release (sedans), heated driver's seat, small diameter steering wheel, engine compartment light, interior light delay (on opening or closing one of the doors), tachometer, turbo boost gauge, voltmeter, oil pressure gauge.

Volvo Accessories

Audio Systems

High powered (80 watt) component with electronic tuning AM/FM stereo cassette, integrated AM/FM stereo cassette, graphic equalizer, twenty watt speakers, power antenna...

Comfort and Convenience Accessories

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

Weather Accessories

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

Performance Accessories

Turbo intercooler kit, road-handling kit, GT steering wheel, alloy wheels, spoiler...

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 and 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 products...

Please ask your dealer for an accessory brochure.

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

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

Volvo engineers select the type and brand of radial to match the specifications of each model and to complement the characteristics of the other Volvo components.

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. For precise tire alignment, Volvo rims are centered on lathe-turned hubs for exact fit and true running.

Volvo engineers try not to leave anything to chance.

All cars have doors. Volvos have doors for grown-ups.

Volvo doors are squarish, instead of big, long rectangles. (They don't weigh a ton, either.) They open wide—to an angle of nearly 80 degrees. The height of both car and seats further complements

the size of the door opening: you can get in and seat yourself without feeling like you're falling on the ground. And when you climb into the back of the two-door Volvo you won't get tangled in a shoulder harness—our system is neat, simple, and out of the way.



GL

Wagon

"The GL wagon is an absolute affront to all those who have come to demand and/or expect blandness in utility vehicles." D.K. Hyde-White II, Auto Showcase

Anyone who spends a moment sitting in 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 adult to sit in a normal position: you don't have to tuck your knees under your chin.

"Except for the body shape—wagon versus sedan with a big trunk—there isn't a whole lot to set them apart."

**John R. White,
The Boston Globe**

You might even say that Volvo wagons are Volvo sedans in disguise. Their overall length is the same (188.8"); their overall width is the same (67.2"); even their turning radius is the same (32'2"). Why such attributes are missing from other wagons remains a mystery to us...

Nevertheless, Volvo wagons have 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. With the rear seat up, you still have a cargo space that's almost four feet long.

To make it easy to get things into and out of 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 from the ground.

"Got any cellos or Chippendales to haul about?" asks *Road & Track's Buyer's Guide*. "Have we got a car for you."

But if you own a Volvo sedan, it isn't necessary to travel light. The cavernous trunk, measuring 13.9 cubic feet and shaped like a big deep box, can hold luggage for a carload of people—upright.

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 a weary, aching driver can make any car dangerous.

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 done intensive

research on the type of spinal fatigue that is greater sitting than standing. The result is a 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. 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.) And when the seat is fully reclined, there's no ridge between the backrest and the seat cushion.

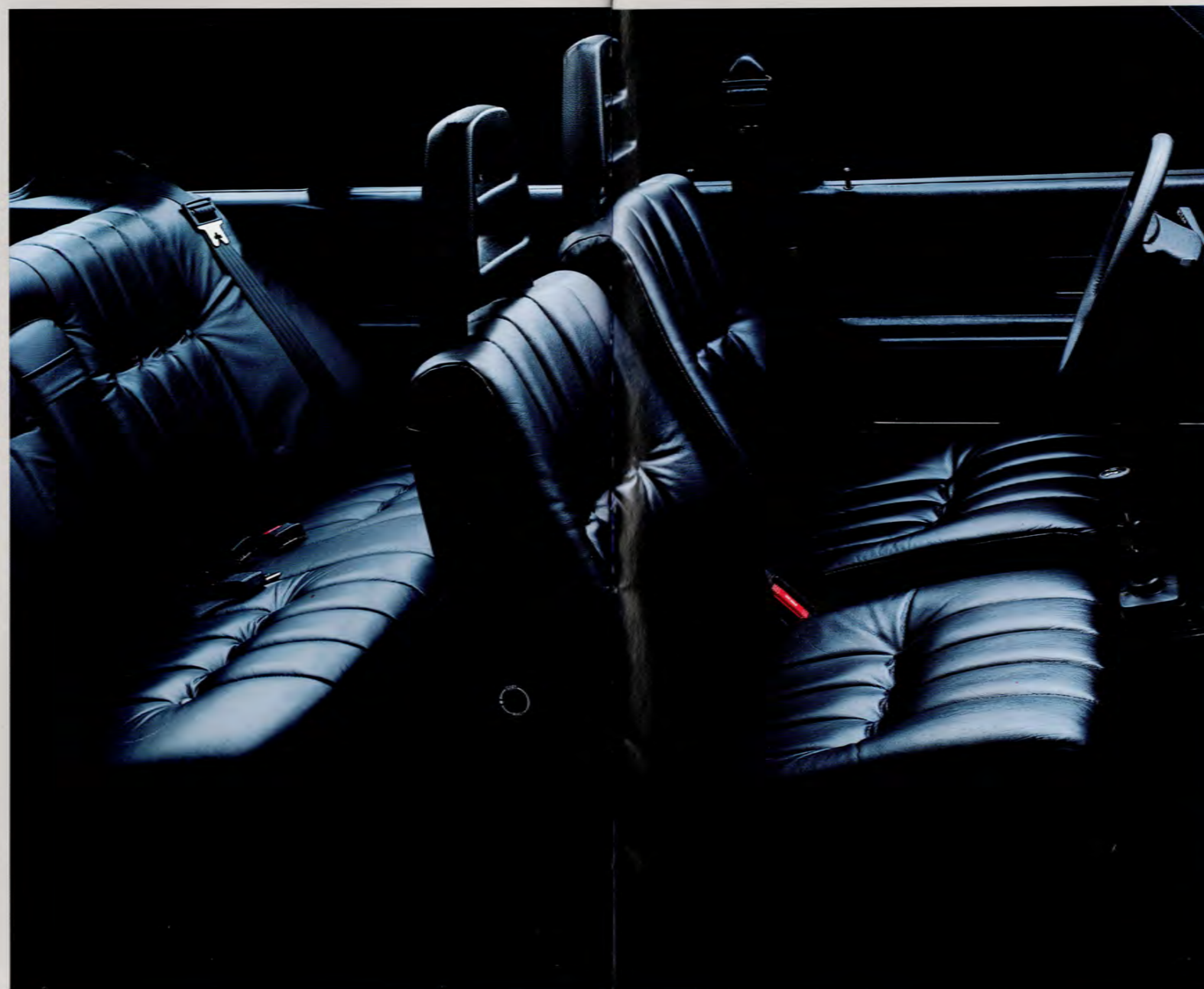
The seat cushions and backrests provide proper thigh support without restricting your blood flow (a restriction that often causes one or both legs to "fall asleep"). The backrests are dished, to hold your upper

body in place as the car corners.

Adjustable lumbar support in each backrest eases pressure on the spine, the cause of back tension and driver fatigue.

For cold mornings, an electrically heated driver's seat is standard in all GL and Turbo sedans and wagons. When the interior temperature drops below 57°F, thermostatically controlled elements automatically warm the seat until it reaches 79°F, then turn themselves off. The heating elements are imbedded just below the surface of the seat cushion and backrest.

Ergonomics — the art and science of designing machinery to be comfortable and efficient for people to use — reaches an enviable level of execution in every Volvo.



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

You'll find room for your head, shoulders, arms and legs—even the back seat allows an average-sized adult to assume the normal sitting position: no knees tucked under chin.

Head restraints are permanently fixed into the seat frames at the proper height to help reduce the possibility of whiplash.

The back seat is unusually comfortable. The broad base is a thick cushion of cold-formed polyurethane foam; flexible but firm, with a center armrest that is standard equipment. The sides of the back are contoured, for passenger comfort while the car corners.

The interior and its instrumentation are designed not to get in your way.

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

To reduce muscle tension and provide an extremely stable driving position, Volvos have a foot-rest for the driver's left foot, so that the driver's feet can be comfortably positioned on the same plane.

To facilitate defensive driving, Volvo sedans and wagons offer the driver better than 90-percent *all-around* visibility. The front door pillars, for instance, are

no wider than the distance between your eyes; in effect, you look through them, 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 glances frequently at the car's instruments. By studying such eye movements, Volvo engineers have determined an instrument configuration and layout that gives the driver the greatest possible information and

control, without unnecessarily drawing attention from the road. 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 and easy to reach, day or night.

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.

Volvo engines deliver not just unbridled horsepower, but torque, the best measure of acceleration: power to spare, not to waste, over a wide range of speed.

As a result, the engine matched to your Volvo will perform dramatically and efficiently from initial acceleration on through high-speed passing situations.

The B23F.

This is the engine you'll find in all DL sedans and wagons, and in all gasoline-powered GL sedans and wagons.

It is easy to get more performance out of an engine by increasing its displacement, but the improved performance is rarely accompanied by improved fuel economy. Yet this is precisely what Volvo engineers have achieved: a 2.3-litre version of the venerable 2.1-litre four-cylinder engine that does not squander fuel.

Displacement was increased by boring the cylinders out from 92 to 96 mm. Other changes include raising

the compression ratio on models with automatic transmission to 10.3:1, and adding both an electronic fuel injection system and an electronic ignition system with knock control. Changing the gearing to capitalize on the increased output improved torque; horsepower is up to 114 on automatics.

As to the basics, the B23F design features a cross-flow cylinder head that improves engine performance by providing a free flow of exhaust gases. The design also 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.

All things considered, the B23F is designed to be rugged, dependable, and capable of delivering plenty of power, while keeping an eye on the fuel gauge.

In *Carmag*, Ed Belitsky gives some interesting testimony to his Volvo's performance during a fast trip through western Canada:



A big, deep, box-like trunk holds luggage for a carload of people.

The nearly square shape of a Volvo wagon can carry a six-foot sofa.

Turbo

Sedan

"The Turbo combines traditional Volvo qualities of sturdiness and safety with exemplary performance and handling... its suspension is calibrated toward the sporting side of Volvo's characteristically benign but responsive handling philosophy. The result is a well-balanced sedan that, citing our road test data, will accelerate to 60 mph in 10.2 seconds, stop from that speed in an impressively short 150 ft., round our skidpad at 0.760g and weave through our slalom at 58.2 mph. Excellent numbers indeed for a luxurious sedan that's 'roomy, comfortable... approaching a sort of elegance in its correctness and simplicity,' to quote our road test report." Road & Track Buyer's Guide

"Total distance travelled was in excess of 5,000 miles, during which time the crankcase oil barely darkened. Although we kept close check on the dipstick, it was unnecessary to add any oil in all that distance."

The D24.¹

The engine Volvo uses in GL diesel sedans and wagons would have pleased Rudolf Diesel himself. The overhead-

cam, in-line, six-cylinder configuration makes the D24 noticeably well balanced and behaved—in fact, it successfully overcomes the defects commonly attributed to four- and five-cylinder diesels. "Swirl chambers" in the cylinder heads reduce the familiar diesel noise, and the swirling air patterns they create ensure a rapid and thorough mixture of air and

fuel. As to performance: from 0 to 55, the GL diesel sedan out-accelerates the Mercedes 240 Diesel by a full three seconds.² Even when fuel prices dip temporarily, your appreciation of the Volvo diesel won't decline.

The B21F-Turbo.

Putting a turbocharger on the Turbo sedan's and wagon's 2.1-litre engine makes it perform like a 3-litre engine: torque is increased 30 percent

over an unboosted engine running at the same rpm.

"Of course," observes *Road & Track*, "the turbocharger is extremely important to the Turbo sedan and wagon. They both already were civilized, durable, high-quality machines with comfortable rides, good driver control, and the safety that comes with thoughtful engineering and careful con-

struction. But the additional power available from the turbocharged engine has brought them the element that was missing from Volvo's line—a little excitement. It is truly an unexpected bonus." (The Turbo wagon, in fact, goes from 0-55 faster than either the BMW 320i or Audi Turbo sedans.²)

Here's how the turbocharger works. The energy of the exhaust gas is used to

drive a turbine mounted on the exhaust manifold. The turbine, in turn, drives a compressor, increasing the pressure of the air/fuel mixture to the engine. To protect the boost pressure, as well as the engine, and to avoid pre-ignition, an integrated "wastegate" allows excess exhaust to bypass the turbine.



¹Diesels are not available in California.

²Based on an independent comparison of 1982 models.

The surprising burst of additional power is reserved for mid-range speeds—to merge you into fast-moving freeway traffic, to take hills with impunity. “The nice thing about the turbocharger,” says *Crossroad*, “is that you don’t have to pay the fuel price for performance when you don’t need performance.”

The latest modification for still better performance: Volvo’s new optional intercooler. Basically a radiator that cools the turbocharger’s compressed air by as much as 135°F (75°C), the intercooler increases the Turbo sedan’s

and wagon’s power over a wide range of speed.

A superior fuel distribution system and a microprocessor-based ignition system are standard on all gasoline-powered Volvos.

Volvo’s sophisticated fuel injection systems automatically regulate the flow of fuel and the air/fuel combustion mixture as the volume, temperature, humidity, and barometric pressure of the incoming air changes. Because the Volvo fuel-injection systems are so much more sensitive and precise than conventional carburetor systems, the engine in your

Volvo now offers better fuel economy, greater horsepower and faster warm-up.

The solid-state ignition system is a microprocessor-controlled unit that does away with breaker points and condenser (components subject to wear and malfunction), providing more consistent and controlled spark than conventional ignition systems. This precise combustion further increases engine performance and fuel economy, and further reduces exhaust emissions.

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

A fully synchronized, *four-speed manual transmission, with overdrive*, is standard on all models. The first and second gear ratios are designed for powerful acceleration, hill-climbing, or trailer pulling, and prolonged engine and clutch life. Says *Car and Driver*’s Rich Ceppos: “The shift linkage is crisp and jewel-like. The clutch take up is velvety and linear.”

The overdrive that comes with the four-speed manual transmission is perhaps even easier to use than a true fifth

gear. It 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. Downshifting below fourth gear automatically disengages the overdrive, so you don’t have to remember to do it before shifting back up.

On the other hand, whether you choose Volvo’s optional *four-speed automatic transmission, with overdrive fourth gear* (on DL, GL, and Turbo sedans and wagons), or the optional *three-speed auto-*

matic transmission (on Diesel sedans and wagons), you’ll be impressed with their quiet performance, and 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 lowest gear.

Above 25 mph, the innovative four-speed 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 breakthrough ever achieved in the fight to obtain clean-running, gasoline-powered cars.

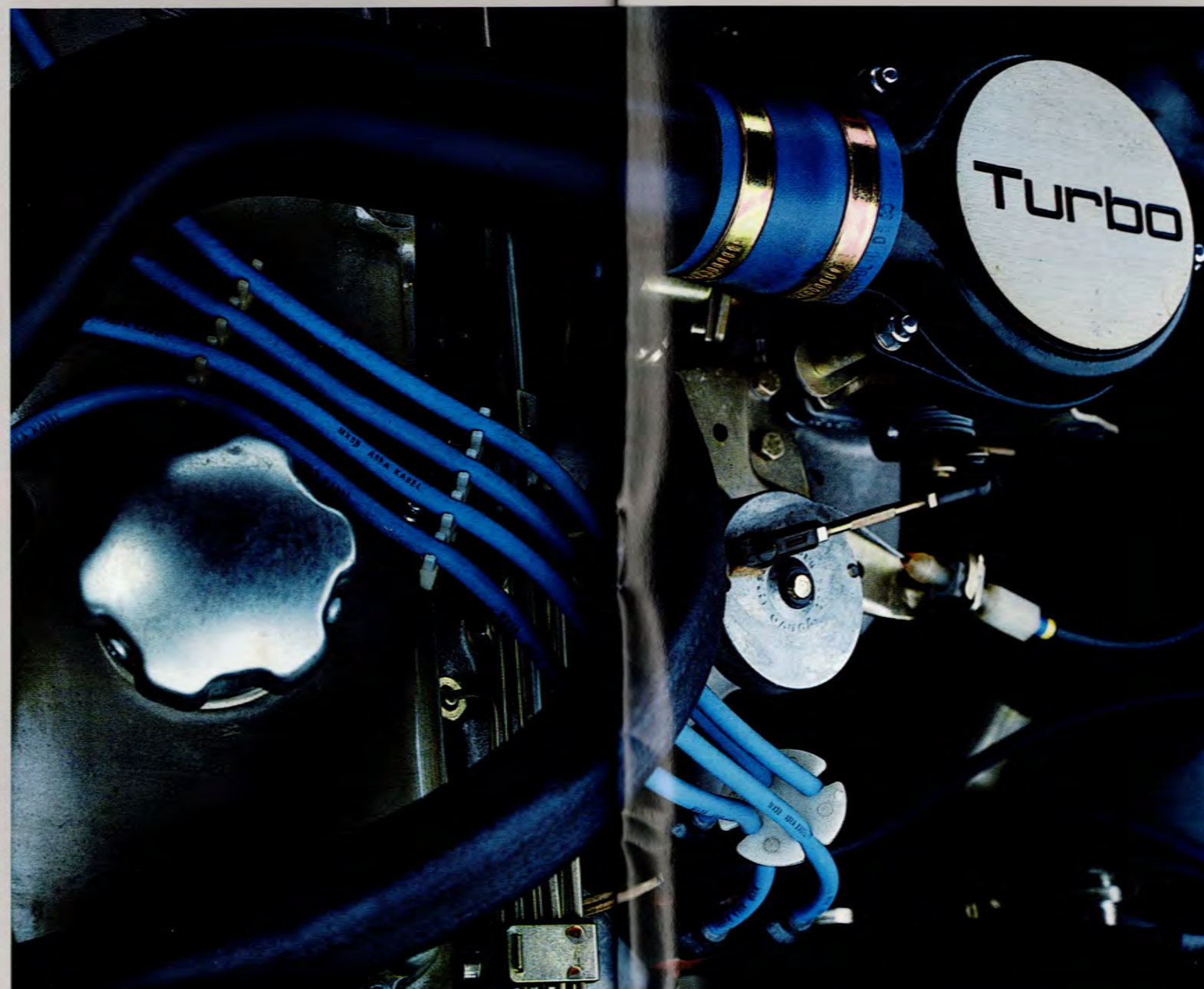
Lambda Sond is standard equipment on all gasoline-powered Volvos. Its introduction earned Volvo the Award for Excellence in Air Pollution Control from the National Environmental Industries Council.

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

Using an unusual substance called zirconia, which was developed by the U.S. space program to detect the presence of oxygen, Volvo engineers produced a sensing device that detects oxygen in the engine’s exhaust gases. It works as an on/off switch that changes the air/fuel mixture, varying it from leaner to richer as needed to maintain 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.

When most auto makers were obsessed with horsepower, Volvo maintained that horsepower alone didn’t produce high performance — and certainly didn’t promote fuel economy. Time has borne us out.



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

"Help! Police! Volvo?"

"Increases in car prices, gasoline and labor costs," reports Seattle's *Magnolia News*, "have led many police departments—as well as taxi and daily-rental companies—to consider overall operating costs (including resale value) as opposed to purchase price only. Volvo's performance in these critical areas has resulted in a growing number of fleet users."

In Renton, Washington, for example, when Police Chief Allan Wallis was asked what he could do to cut his department's costs, he decided, after considerable research, to buy a Volvo as a patrol car. The Renton *Record Chronicle* tells the story:

"Wallis said he relied heavily on a publication called PIN (Product Informa-

tion Network), a type of consumer report for cities. That publication had good things to say about Volvos being used for police patrol.

"Both Rapid City, S.D., and Falls Church, VA, use Volvo police cruisers and find that they provide excellent savings in downtime and fuel economy," the publication reported. Rapid City has been using 20 four-cylinder turbo-charged Volvos—older mod-

els of the car Renton bought—for three years.

"According to PIN, Rapid City reports 15-16 mpg and four hours of downtime a month; this compares with the 6-9 mpg and 14 hours of downtime for the department's previous fleet of Ford LTDs. Falls Church has reported similar or greater

savings in downtime and fuel economy."

"Windsor, CN, officials reported to PIN that its Volvo, purchased in August, 1982 for \$12,600, had been 'a marvelous performer.' Even though the car's initial purchase price was nearly \$4,000 more than Chrysler cars bought at the same time, the Windsor police chief 'estimates from cost savings thus far that the vehicle will

pay for itself within a year, and continue in front-line service for another year after that.'

"Words to gladden the heart of any Volvo owner."

Turbo

Wagon

"This wagon is so willing it makes most workday cars feel as if they are much more closely related to Conestogas than the Turbo is, and yet it's taken the Swedes to realize that some Conestoga virtue is a fine thing to marry to some hell-and-gone behavior."

Larry Griffin, *Car and Driver*



Luggage racks are optional with charge on all wagons.

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. Some quotations in this brochure may refer to 1982 or 1983 Volvos.

© 1983, Volvo of America Corporation
Printed in USA
ASP 01-0983-329.6 USA