
VOLVO Experimental Safety Car

Volvo's Commitment to Improve Automotive Safety

Worldwide concern over automotive safety is opening up the most intensive search into all types of safety systems and is generating vast financial investments by automotive manufacturers around the world.

AB Volvo, Sweden's largest automobile manufacturer, is responding to the international challenge by building a fleet of 10 "rolling safety laboratories." These Volvo experimental safety cars represent Volvo's significant contribution to the worldwide effort to improve automobile safety.

The experimental vehicles conform to Volvo's own stringent safety requirements, established in 1969 when its safety car project was launched. When the American experimental safety vehicle (ESV) requirements were released in 1970, Volvo found that its requirements coincided to a substantial degree with the American ESV standards.

The safety vehicles are not intended for series production. Volvo has built the operational cars for experimental purposes only and most of them will be totally destroyed in the testing program.

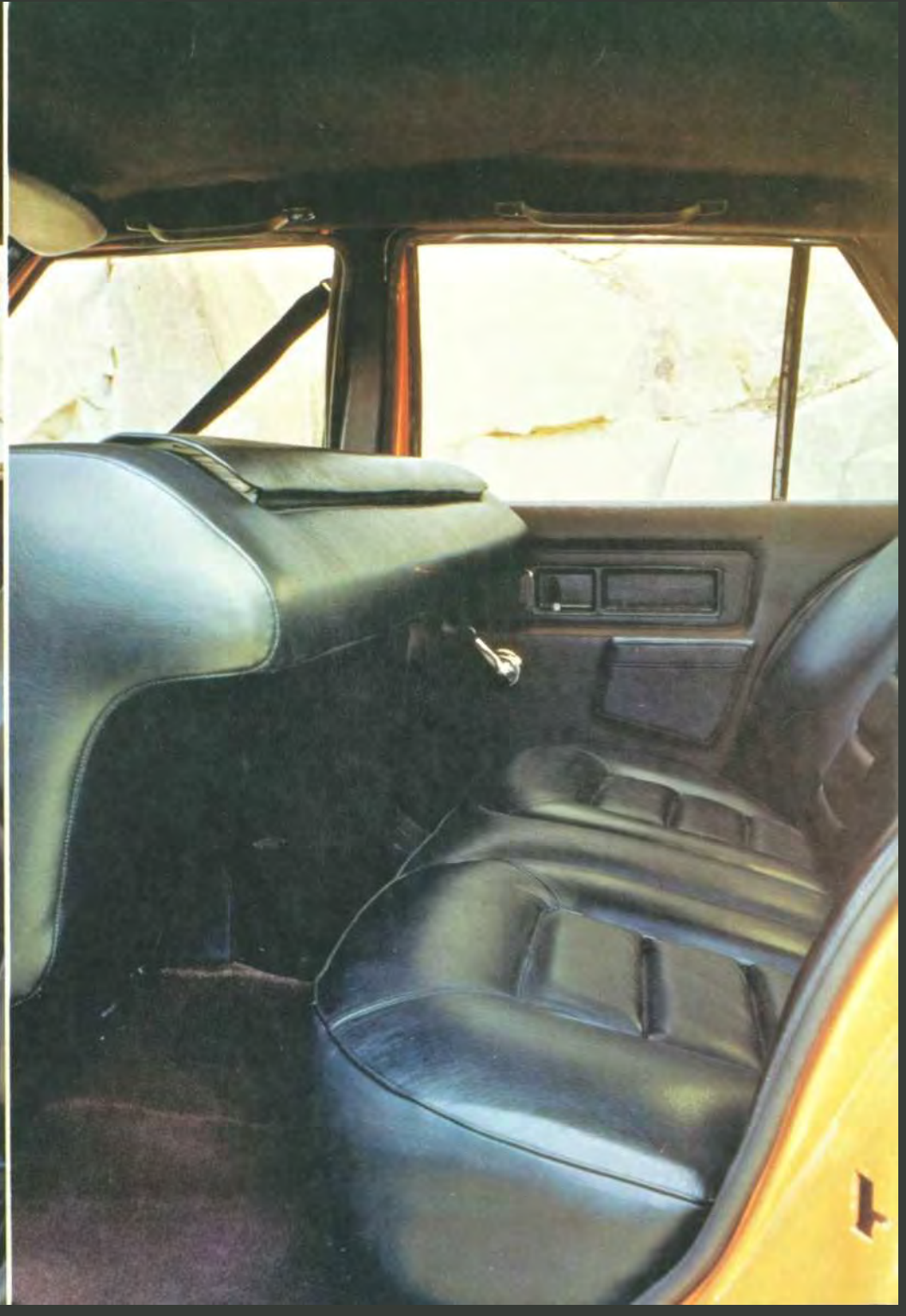
Cars built for the experimental safety car project will serve as productive tools for Volvo in extending its safety improvements,which Volvo hopes to incorporate into its models in the late 1970's.

Volvo's extensive participation in the international dialogue on automotive safety is a continuation of its long-term commitment to improving automotive safety world wide.

"In 1969," said Rolf Mellde, chief engineer of Volvo's Car Division, "Volvo decided to combine safety projects already underway with those that were planned. This resulted in one large safety project that is concentrating on building maximum safety into cars suitable for series production."

Before designing and building the safety car fleet, Volvo's engineers first carefully calculated and analyzed what happens to the occupants and the car in a frontal, side and rear collision. Extensive testing of production type cars was also performed. Volvo thus determined its own specific sub-systems requirements which corresponded closely with the U.S. ESV standards.

Volvo expects its fleet of safety cars to contribute heavily to the dialogue taking place around the globe in the interests of automotive safety.



Volvo's new Technical Center in Gothenburg, Sweden is the test site for the important evaluation of the experimental safety cars under numerous strenuous testing conditions.

Studies are underway on the anti-lock brake system which is electronically-controlled. It is a well-known fact that in emergency situations brakes are applied in panic, causing locked wheels, loss of steering capability and longer braking distances. The safety car system regulates brake pressure automatically to reduce the possibility of skidding and to provide adequate steering capacity during emergency braking.

Barrier tests will put the experimental vehicles through extremely punishing experiments. The cars will be tested in frontal crashes at speeds up to 50 miles per hour. The front-end of the safety car has been designed to permit a deformation of more than 40 inches. Volvo has established a maximum permissible intrusion of four inches when another vehicle collides into its side at 30 miles per hour. The rollover bar has been designed to reinforce the roof section to deflect no more than three inches when dropped from a height of 10 feet. In all of these tests the entire fuel system must remain completely intact.

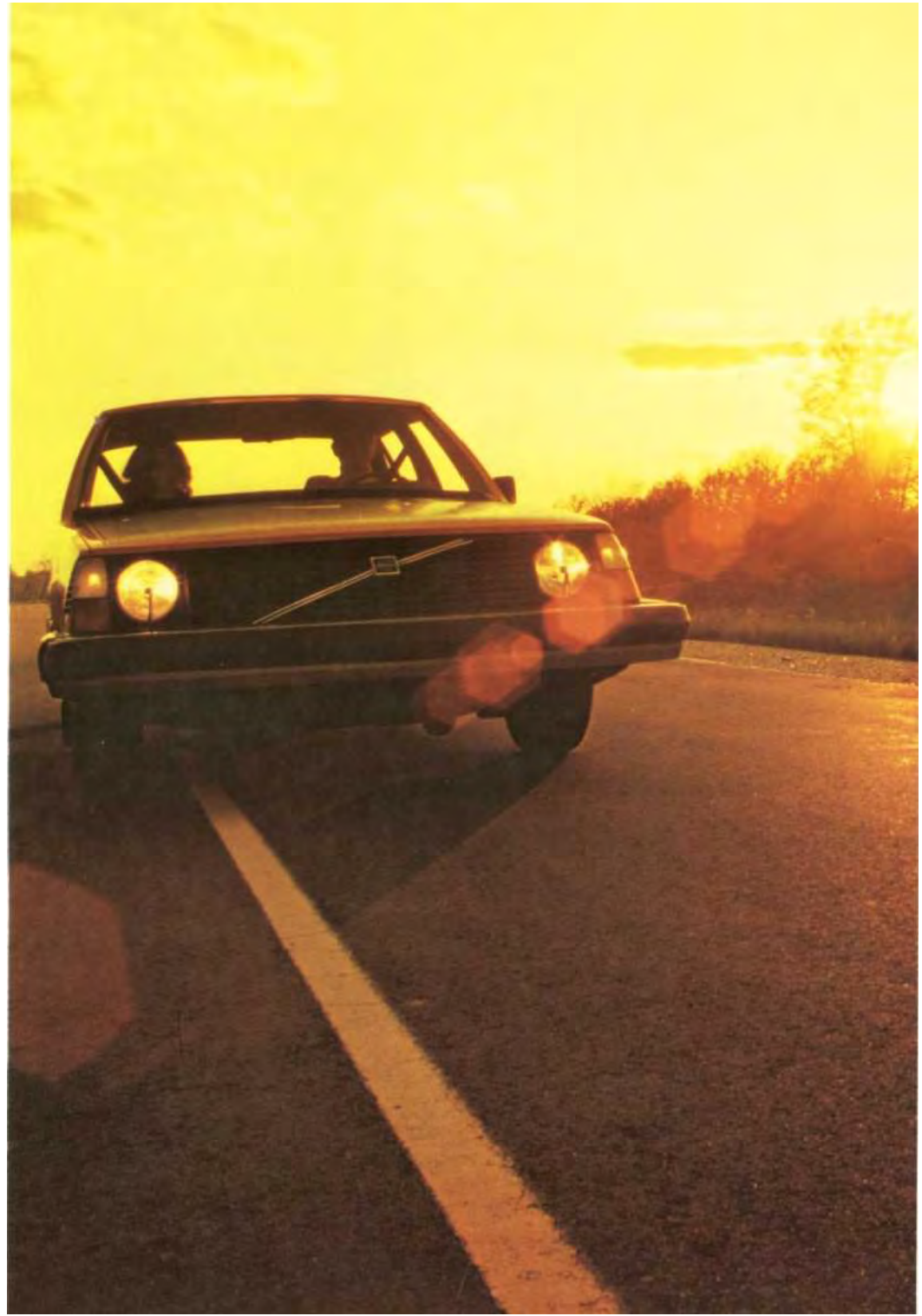
To facilitate rescue work in the case of a collision, Volvo will require that at least two doors remain functional and can be opened after each type of collision. A fire restraint interior is required as is a deceleration activated cutout fuel pump, positioned toward the rear, to give added protection against fire.

All sharp protusions have been eliminated in exterior design and styling. Inside the safety car, hip padding offers protection for passengers in the event of side collisions.

Maneuverability — handling characteristics under normal and unusual operating conditions—plays a major role in the testing program. A computer simulation already has proven that Volvo safety cars handle well under all conditions. The company's new test track will help provide the final answers.

A level control system in one of the safety cars maintains a constant car level despite disproportionate weight loads in the trunk or passenger compartment.

Another Volvo safety vehicle maintains headlight alignment automatically through a hydraulically regulated control unit at the rear suspension.



Passenger Protection and Accident Avoidance Systems

Volvo designated its experimental safety car project to evaluate parallel developments of various safety systems. For instance one of the two cars built to date has front seats equipped with "semi-passive" safety belts which come into operation automatically when the car is started and the hand brake released.

The second car has air bags for all occupants, including air bags on the rear window shelf to protect back seat passengers in rear end collisions.

The protruding bumpers undoubtedly distinguish safety cars from ordinary production vehicles. While this prominent profile characteristic bears the mark of a well-considered design, it plays a significant role in improving automotive safety.

At speeds up to 10 miles per hour against a fixed barrier, the protruding front bumper will flex seven inches to absorb the impact and to protect the car body from damage. The rear bumper flexes three-and-one-half inches against a movable barrier at the same speed.

In conjunction with a semi-passive safety belt system, a "disappearing" steering wheel lessens the chances of driver injury by pulling away in a frontal collision. Activated on impact by a deceleration sensor, the spring pulls the steering wheel forward six inches.

In this car front-seat head restraints are built into thickly-padded seat backrests. In a collision, they pop up automatically to provide added protection.

Volvo's safety standards include headlight washers and wipers with a circular sweep to add to night driving and poor weather visibility.

A system of high-strength steel members protects the car bodies. A rollover bar crosses the roof and tubular steel reinforcements run along the body inside the doors. Special hooked-units lock securely onto door posts to minimize side impact effects and to reduce intrusion into the passenger compartment by another vehicle.

Each rear window in the Volvo safety cars is equipped with an electric demister/defroster and its own wiper and washer.

An engine mounting system was specially designed to increase passenger protection in frontal collisions. On impact the engine is forced under the car, thus avoiding the extreme hazard of engine block intrusion into the passenger compartment.

The experimental vehicles are powered by four-cylinder engines with electronically controlled fuel injection. The emission control system includes exhaust gas recirculation, manifold air injection and a catalytic converter.

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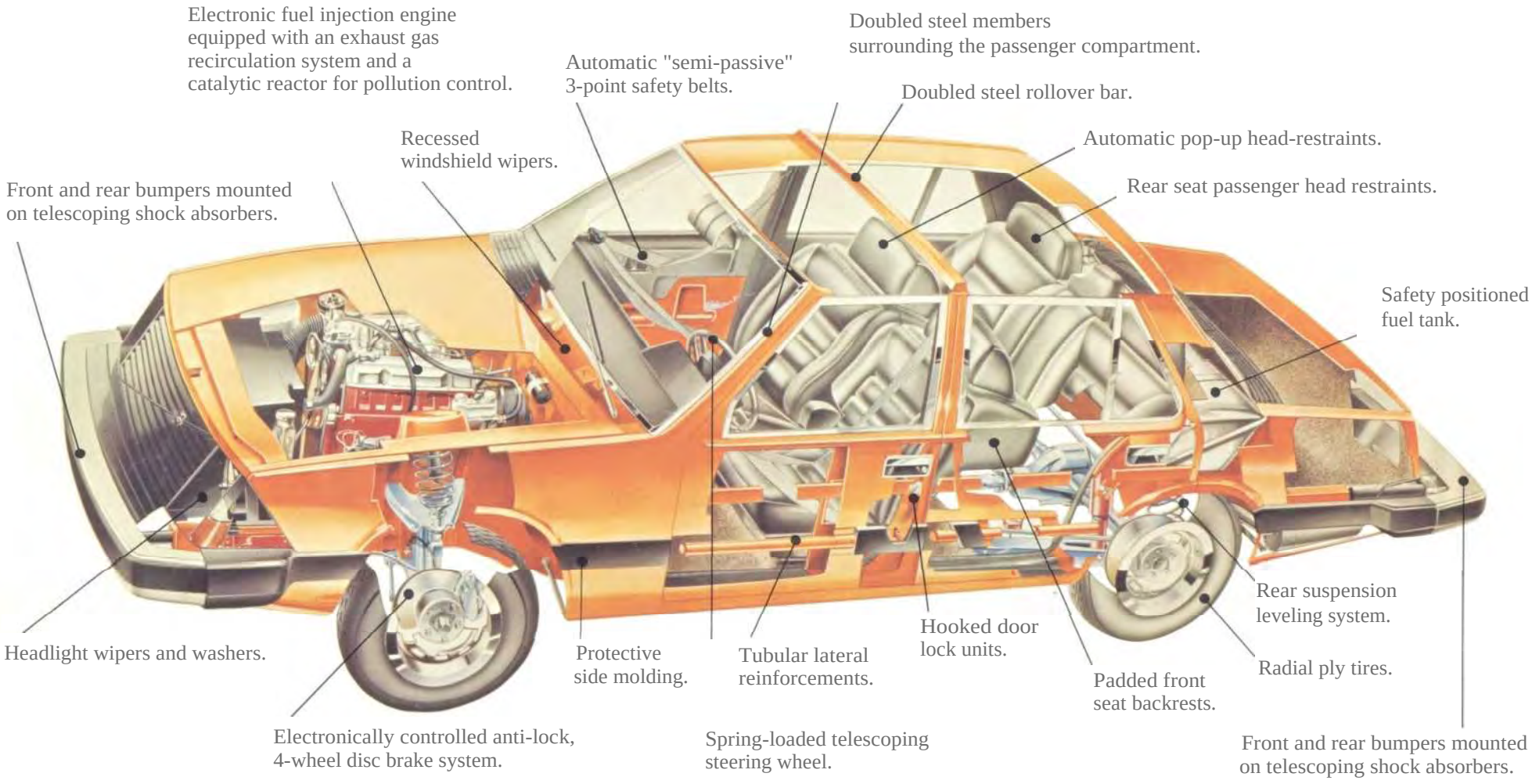

Volvo Experimental Safety Car Specifications

Length 205.7"	Track, front 58.3"
Width 71.7"	Track, rear 57.7"
Height 55.9"	Weight 3200 lbs.
Wheelbase 106.4"	