

**AN EXPLANATION, IN PLAIN ENGLISH, OF THE
MOST TECHNOLOGICALLY ADVANCED CAR OF THE 1980'S.**



SAAB 1983



SAAB

turbo

“Saab doesn’t build automobiles—Saab builds Saabs,
which are a highly original and highly logical answer to at
least one facet of the human transportation problem”—
Car & Driver.

SAAB ENGINEERS ADDRESS PROBLEMS, NOT MARKETING FASHIONS.

The first Saab automobiles weren't designed by automotive engineers working with decades of tradition behind them. They were designed by the aeronautical engineers of Svenska Aeroplan AB, men who had taken part in the enormous growth of aircraft technology during World War II.

When they turned their attention to building an automobile, they went at it in the same way they approached a new aircraft design. Without preconceptions or prejudices, seeking out answers to the problems posed by Nature.

For more than 30 years, Saab has maintained that approach to the problems of automobile transportation. Ever since 1950, we've heard other people call our cars "revolutionary," "innovative," and "radically different". We've thought

of them simply as commonsense answers to real problems.

FUN IS NOT AN ACCIDENT.

Even though they weren't automotive engineers, those first Saab planners were automotive enthusiasts. When they designed a car, it wasn't enough for it to be safe and strong, economical and comfortable. It also had to be fun to drive.

From the beginning, Saab's customers included a dedicated corps of enthusiasts who raced and rallied all over Europe, North America and Africa.

That driving pleasure is the end result of Saab's insistence on solving real-world problems rather than jumping at momentary marketing opportunities.

Most other auto manufacturers seem to go at design the other way around. First they see a change in the market; then they tell their

designers, "Hey, we need a new sports coupe!" Or station wagon. Or sedan. That approach imposes a whole set of prejudices and preconceptions on the designer about how the finished car will look and what compromises will have to be made.

Saab engineers begin with a set of problems:

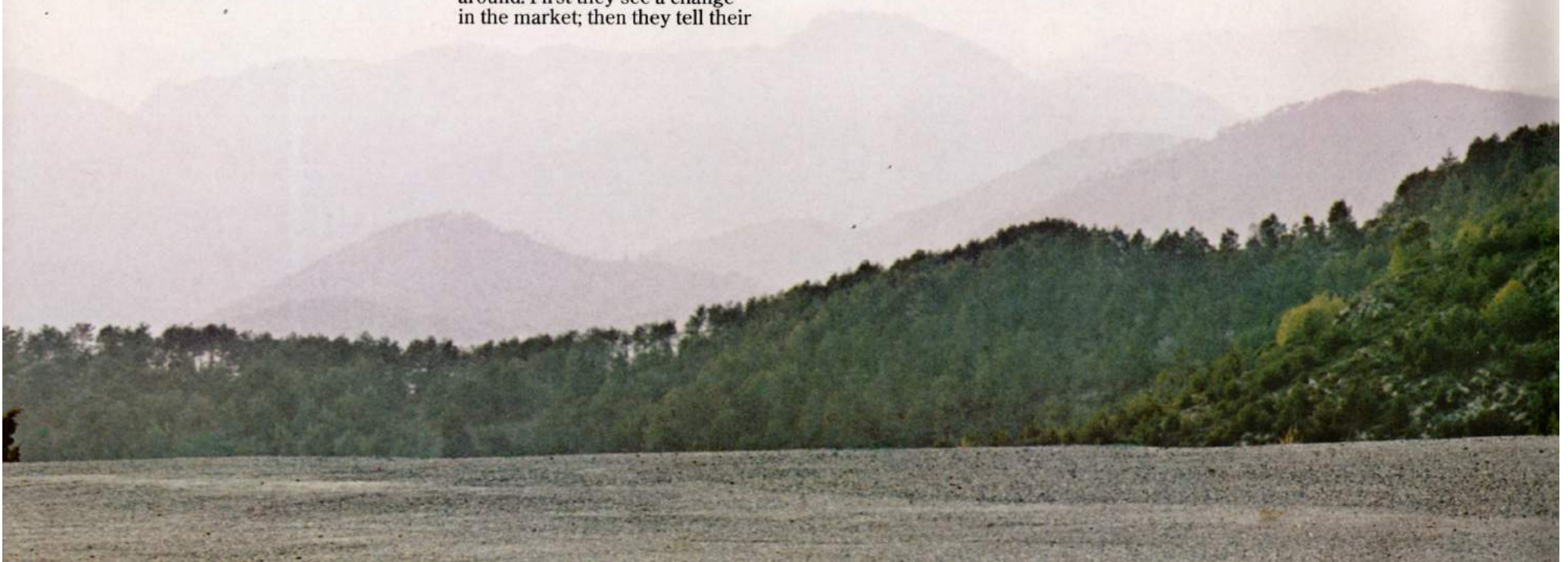
- How do we build a reliable and economical engine that's powerful and responsive enough to meet the demands of modern highway driving?
- How do we put that power and responsiveness in the driver's hands, so that he can control the car easily and positively?
- How can we build a cockpit that will keep that driver relaxed and alert enough to use those controls effectively?

—How can we transmit the engine's power to the ground in a way that permits the driver to avoid accidents in almost any conditions of weather or traffic?

—How can we build a car strong enough to help protect its occupants when a crash is unavoidable?

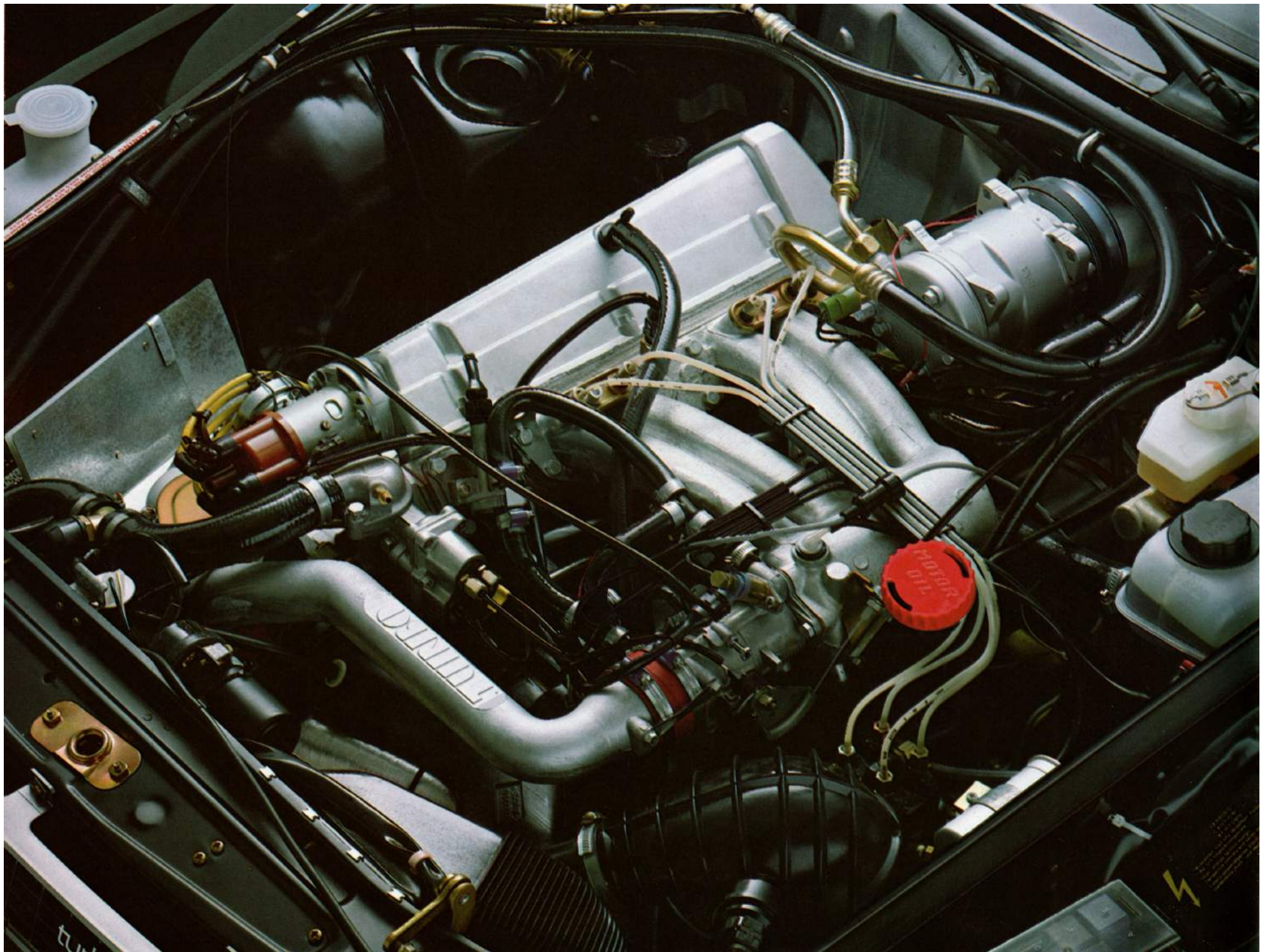
—How can we create an interior that will accommodate four adults comfortably and that has expandable luggage space, without also dictating an oversized exterior?

The validity of Saab's problem-oriented approach has been proven not only by thousands of Saab owners but by the frequency



with which our "revolutionary" and "radically different" ideas are eventually copied by other manufacturers. In the 1950s, few cars had front-wheel drive and little attention was given to aerodynamic bodies. In the early 1970s, the hatchback coupe was a new and strange body style. All of those early innovations have become commonplace and today other manufacturers are beginning to follow Saab's lead in the turbo-charging of passenger car engines.





HOW DO WE BUILD A RELIABLE AND ECONOMICAL ENGINE THAT'S POWERFUL AND RESPONSIVE ENOUGH TO MEET THE DEMANDS OF MODERN HIGHWAY DRIVING?

Developing both power and economy in a single engine is the kind of engineering problem that, on the face of it, looks unanswerable.

Because, traditionally, you make an engine more powerful by adding cylinders or enlarging them and more economical by taking away cylinders or making them smaller. Obviously, you can't both increase and decrease an engine's displacement, so a different approach is called for.

In fact, the problem had to be approached from several different ways before Saab engineers were satisfied that they had achieved the balance of performance, economy and reliability that they sought.

- All Saab 900 models share a basic powerplant. This is a relatively small engine that is lightweight and extremely efficient at deriving the maximum benefit from the fuel it uses. It's an engine that is flexible enough to cope easily with the driving requirements of the majority of drivers.
- For those other drivers, the minority who want or need an outstanding high-performance vehicle, Saab engineers have developed a sophisticated turbocharging unit which boosts the engine's maximum power to 135 horsepower from the basic unit's 110.
- All Saab 900s have an advanced aerodynamic body that minimizes air resistance and uses the engine power more efficiently. Although this isn't

truly a problem relating to engine design, it does illustrate the integration of all facets of Saab design. On the one hand, the aerodynamic body shell enhances the engine's function. On the other hand, the engine is canted at a 45-degree angle, to allow the deep slope of the hood.

THE 900 POWERPLANT.

Although the Turbo is our "high-performance" model, all of the Saab 900s are exciting cars. In designing even our most modest car, performance was an important consideration. For one thing, we're automotive enthusiasts and we believe that a car *should* be fun to drive.

There's an even more important consideration regarding a car's ability to perform, though. That's safety. We were early pioneers in the field of active safety and we recognized quickly that part of staying safe lies in being able to get out of trouble's way. When a driver needs to go into an oncoming lane to pass slow traffic, he wants to be exposed for the shortest possible time. When he comes onto a highway, he wants to get up to cruising speed as quickly as possible.

The engine which all current Saabs share is a four-cylinder, two-litre, single overhead camshaft, fuel-injected powerplant which, in its normally aspirated (non-turbocharged) version, develops 110 horsepower and 119 foot pounds of torque.

The size of the engine—two litres divided among four

cylinders—is very flexible. It's a small enough engine to use fuel conservatively but large enough to develop plenty of torque for moving the Saab 900 from a full stop, or up a hill under a load.

To keep the engine weight down, the cylinder head, camshaft cover and intake manifold are all cast in a lightweight aluminum alloy.

Mounting the camshaft overhead, directly above the valves, permits much more precise timing of valve operations than previous systems did, with the complicated arrangements of pushrods and rocker arms. It also reduces the weight of the engine and the number of moving parts.

All Saab 900s use the Bosch continuous-injection fuel injection system, instead of conventional carburetors. The advantage of fuel injection is that it maintains the optimum mixture of fuel and air at all speeds, so that the engine operates efficiently throughout its entire range.

FOR THE DEMANDING MINORITY: TURBOCHARGING.

The 900 series engine easily satisfies the needs of the great majority of drivers. The handful who remain are the genuine high-performance enthusiasts. Saab takes the needs of that minority very, very seriously.

The evidence of our concern is the Saab 900 Turbo.

We introduced turbocharging in our cars in 1978. This year, with the introduction of our new Auto-

matic Performance Control (APC) system, Saab offers the most efficient turbocharged gasoline engine available in a passenger car.

Turbocharging lets the driver get power from his car that's equivalent to the power of a six-cylinder or V-8 engine, *when he wants it*. When there's no demand for high performance, the Saab Turbo behaves like a four-cylinder car, giving you all of the fuel economy of the smaller engine.

Of course, a larger engine would give you the same sparkling performance as the Saab Turbo, but most of the time it would be wasteful. Even enthusiastic drivers spend most of their driving time at low speeds and get to use the power of their engines only about 15 percent of the time. At low speeds, a six-cylinder or V-8 engine is burning more fuel than it needs to move the car.

The turbocharger, on the other hand, makes the same power available without adding weight to the car or increasing the fuel demand at low speeds. By adding a turbocharger to the Saab 900 engine, we boosted horsepower from 110 to 135 and increased maximum torque from 119 foot pounds to 172 foot pounds. Thanks to the new APC system, the Turbo can run comfortably on low-octane fuels, and even at 87 octane will develop 160 foot pounds of torque.

As exotic and complicated as turbocharging may sound, it's really a simple, commonsense idea. Even before Saab developed the system that makes it practical on passenger cars, turbocharging was

SAAB 900 S



used successfully on aircraft, trucks and racing cars.

In fact, the basic idea has been around for most of this century. The principle was patented in Zurich in 1905 by Dr. Alfred Buchi.

MAKING IT ALL WORK.

A turbocharger is basically two wheels connected by a shaft. One of the wheels, the turbo turbine, is spun at high speeds by heated exhaust gases leaving the engine. The turbine spins the compressor, the second wheel. The compressor pressurizes fresh air going into the cylinders for combustion.

Because the engine is now getting more air forced into it, it's capable of burning more fuel. That allows it to produce much more power than a normally-aspirated (unturbocharged) engine of the same size would produce.

Until Saab's development of the wastegate, the turbocharger was only usable on engines which would operate at high speeds and high internal pressures most of the time. The wastegate, or charging pressure control valve, is opened when pressures in the intake manifold reach a predetermined level. When it opens, it bypasses a portion of the engine exhaust gases around the turbine, reducing the turbo boost.

The wastegate protects the engine from being damaged by the high pressures which the turbocharger develops. Thanks to that protection, Saab engineers were able to design a very small turbocharger, lightweight enough to respond to normal driving speeds. The Saab turbocharger begins operation at engine speeds between 1,500 and 2,000 revolutions per minute (rpm). By the time the

engine is turning at 3,000 rpm, still a moderate engine speed, horsepower has been boosted by a third just by the action of the turbo unit.

At 4,800 rpm, the Saab Turbo hits its peak horsepower of 135.

AUTOMATIC PERFORMANCE CONTROL.

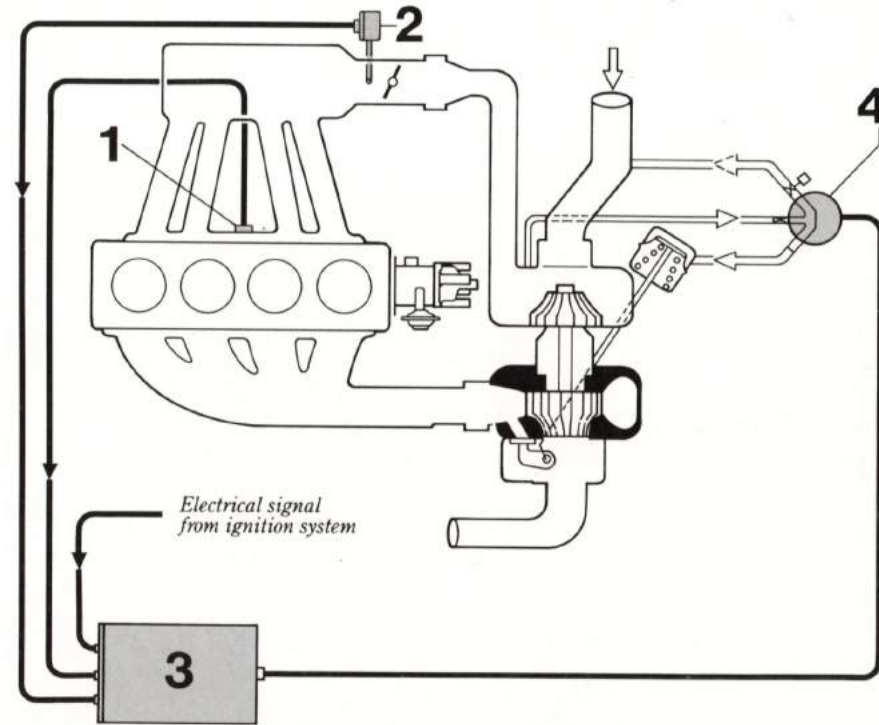
For 1983, all Saab Turbos are equipped with a new APC system. The APC monitors the octane rating of the gasoline used and adjusts the turbo boost to take advantage of it. It increases the boost to get maximum use from high-octane fuels, and decreases it to protect the engine from knocking due to low-octane fuels.

Octane rating is a measure of the gasoline's ability to withstand compression in a mixture with air. A 93 octane fuel can be safely compressed farther than an 87 octane fuel.

An engine's efficiency depends largely on its compression ratio. The greater the compression, the more use it gets from its fuel. But the danger of engine knock also increases with pressure, because a fuel that is compressed too far can self-ignite in the cylinder at the wrong moment. Too much knock can severely damage an engine.

Choosing a safe compression ratio is especially critical in a turbo engine, because the turbocharger increases pressure when it's in operation. To prevent excessive knock, most manufacturers of turbo cars have opted for low compression ratios and low maximum turbo boosts. While that may be safe, it isn't efficient.

A boost setting that's low enough to protect the engine from the lowest possible octane fuel under the worst conditions is too



Saab's new Automatic Performance Control (APC) system consists of: (1) a knock detector that measures vibration in the engine; (2) a pressure sensor which monitors air pressure in the intake manifold; (3) a solid-state electronic control unit which processes the information from the knock detector and pressure sensor, and then operates (4) the solenoid valve. The solenoid valve controls the intake charge pressure according to the instructions from the control unit.

low to get the best use from your gasoline.

Since the APC system provides comprehensive protection to the engine regardless of the octane rating of the gasoline, we've been able to increase the Turbo's compression ratio from 7.2:1 to 8.5:1, making it the most efficient gasoline turbocharged passenger car available.

The system includes a knock sensor, mounted on the outside of the engine between cylinders two and three; a pressure transducer on the intake manifold; an electronic control unit which balances signals

from the pressure transducer, the knock detector and the ignition system; and a solenoid valve which opens and closes in response to commands from the control unit.

If any part of the APC system fails, the entire system stops operating, and the turbocharger functions as a conventional unit. With the APC out of operation, the turbo's fixed maximum boost is low enough to ensure knock-free operation with the worst grade of gasoline until the APC system can be repaired.

HOW DO WE PUT THAT POWER AND RESPONSIVENESS IN THE DRIVER'S HANDS SO THAT HE CAN CONTROL IT EASILY AND POSITIVELY?

The cockpit of the Saab 900 is crisp, clean, functional.

From his seat, the driver has a broad, uninterrupted view forward, with the car's instruments at the lower edge of his peripheral vision. The steering wheel is angled and sized to come solidly to his hand. And without taking his hand from the wheel, he can reach the switches for windshield wipers and washer, turn signals and headlight flasher/dimmer. The gearshift lever is next to his right hip, within easy reach, and the car's pedals are large enough for sure operation even by heavily-booted feet.



Everything about the cockpit works to give the driver a fast and accurate flow of information and to enable him to respond just as quickly and accurately. This is a work space designed for a driver who has to be able to make fast judgments and react quickly to them. It's a work space that bor-

rows a lot from aircraft design, as a matter of fact.

Ergonomics, the technology of the workplace, came of age in the aircraft industry because pilots have to be able to monitor lots of different kinds of information and respond quickly and surely. Some of the leading scientists in this new technology are employed by Saab-Scania's Aerospace Division, and the application of their research to our cars has been almost immediate.

Many of the design features of the Saab 900 resemble their counterparts in Saab fighter jets for just that reason. The deeply curved windshield, for instance, that moves the car's "A" pillars back behind the driver's field of vision.

Or the instrument cluster. The instruments are designed and located so that any sudden change in the car is telegraphed to the driver, even though he isn't looking at the instruments at the moment. First of all, they are large, round gauges, with white figures and orange pointers against a black background. A sudden change of a pointer's position is much easier for a driver to see quickly than a change in a digital display. And the instruments are clustered just below the bottom visible edge of the windshield, directly in front of the driver, framed by the upper half of the steering wheel.

The instruments are also set deeply inside a curved control panel, so that they're protected from glaring light that would make



The 900's cockpit is designed to give the driver complete control. Figure A shows the dashboard with instruments displayed at the bottom edge of the driver's vision and controls close at hand. Figure B demonstrates "clustering" of controls by function; all of the starting controls (gearshift, ignition lock and handbrake) are located together at driver's right side. Figure C shows Saab's new tachometer with an indicator to show the most economical engine speeds.

them unreadable. That same curve of the panel presents an array of controls to the driver in a way that puts them close to the steering wheel, without a confusing cluster of dissimilar functions.

One of the things that keep it unconfusing is the grouping of controls into zones. All of the lighting controls, for instance, are on the left side of the steering column. The ones which will be used frequently, directional signals and the bright/dim switch, are on a single stalk, while the on-off switch for headlights and parking lights is a recessed rotary switch.

All of the starting controls (ignition switch, handbrake, and gearshift lever) are located together in the center console on the driver's right side.

To make sure that the flow of

information from outside the car is as complete and easy to read as the information from instruments, we use windshield wipers which sweep in an asymmetrical pattern, to clear the broadest area possible.

The Saab 900's back-up lights include not only lighting at the rear of the car but side-guidance lamps to help in parking or backing from tight spaces. And indicator and parking lamps are wrapped around fenders for visibility through an arc of at least 235 degrees.

The inside rear-view mirror is adjustable for day or night driving, to keep glare out of the driver's eyes. And the large external mirrors are adjustable from the driver's seat.



EDGE



SAAB turbo



HOW CAN WE BUILD A COCKPIT THAT WILL KEEP THE DRIVER RELAXED AND ALERT ENOUGH TO USE THOSE CONTROLS EFFECTIVELY?

However sophisticated a car may be, most of what happens to it happens because a driver makes decisions and acts on them. His decisions are more apt to be sound, and his reactions appropriate, when he feels comfortable and alert. Muscular fatigue, eyestrain, drowsiness, cold and sustained noise impact will all impair his performance.



Firm padding, strong steel frames and polyester velour coverings combine to make one of the most comfortable and supportive car seats in the world. Saab seats are adjustable fore and aft; for seat height and angle; and for backrest rake. Front seats in the 900S and Turbo models are electrically heated.

When we designed the cockpit of the Saab 900, we wanted to provide a comfortable and supportive

environment, where a driver can spend several hours at a time without a serious loss of effectiveness.

NECK TO KNEE SUPPORT.

One of the obvious keys to providing that kind of support is in the design of the seats, and Saab has been widely praised for its seats. In some cars, including some very expensive ones, the driver sinks into soft, deep foam as if he were sitting in his living room. Not in a Saab.

In the first place, the kind of "comfort" those cars offer is suitable to quiet reverie, not to an activity as dangerous and demanding as driving a car. In the second place, it isn't even very comfortable during a long drive.

Our seats don't lack foam padding but you won't sink into them. The foam is firm, not quite hard, and gives you the feeling that you're being lifted rather than sinking. And the seat isn't just a shapeless pillow of foam rubber, either. It's been molded orthopedically to support the driver's back muscles from his neck to his knees, with added reinforcements at critical places like the top of the back and in the lumbar region.

They're also dished inward, to give the driver and passengers lateral support, so they don't have to hang onto the steering wheel or search for handholds in moderate turns. Even the rear seats are designed to support adults com-

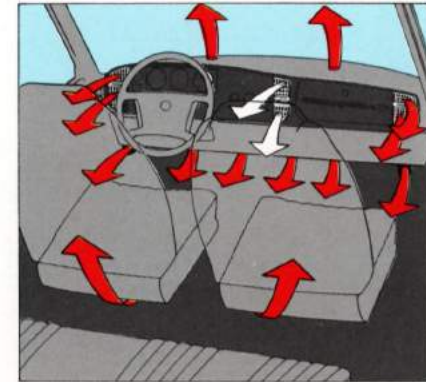
fortably for several hours and to hold them safely in place during the ride.

Perhaps the most famous feature of our Saab seats is that, in the 900 S and the Turbo, the front seats are heated during cold weather with an internal electric heater. The heater warms the seat until the cockpit temperature climbs to a comfortable level.

A lot of people think that's a nice luxury touch. We think it's an intelligent way of assuring that the driver can function well even in cold weather. We've seen aeronautical and military studies that state that humans don't think or act as effectively when they're cold and that their muscles aren't as capable of precise movements as when they're warmed up. So we take the chill off the driver fast because an emergency can arise just as easily in the first 15 minutes after you start out as it can four hours later.

That heater usually doesn't have to operate for very long because the Saab 900 has an exceptionally efficient heating and ventilation system, with vents located above, below and alongside the instrument panel. The driver has available a number of combinations of fan speed and vent openings for heat or fresh air, so that the cockpit can be kept comfortably ventilated at all times.

In cars that aren't equipped with air conditioning, Saab has installed an air filter which strains dust, pollen, oil and soot, and even some bacteria, from the air that comes into the passenger compartment. That helps keep the interior clean and fresh, and it's a real benefit to asthma and allergy sufferers.



The 900's heating and ventilation system can move 100 liters of clean, fresh air through the passenger compartment every second. Fresh air nozzles in the middle of the instrument panel give the driver and passenger the option to enjoy a flow of cool air, while the heating system warms the rest of the compartment.

Saab's very high level of outward visibility helps to prevent driver's eyestrain. The rear view mirror inside the car has a night setting to deflect the headlights of cars behind and the external mirrors are treated with a non-dazzle tint. The car's bronzed-tinted windows also substantially eliminate glare.

An interior light behind the rear view mirror allows the front seat passenger to read a map at night but won't dazzle the driver because the lateral light beam is pointed away from him. The glove compartment light is the same green as the instrument panel lights and won't interfere with the driver's night vision.

SAAB 900 S



HOW DO WE TRANSMIT THE ENGINE'S POWER TO THE GROUND IN A WAY THAT PERMITS THE DRIVER TO AVOID ACCIDENTS IN ALMOST ANY CONDITIONS OF WEATHER OR TRAFFIC?

The joy of driving a Saab comes on roads that, in other cars, aren't any pleasure at all. The confidence that a Saab driver has as he takes on winding curves, rough weather and poor surfaces is a reflection of how well-engineered this car really is.

All Saabs have been fun to drive because they've all handled well. The car answers the steering wheel quickly, precisely and consistently, even when it's carrying its maximum load.

The Saab's superb handling characteristics are the result of a nearly perfect balance of factors: front-wheel drive; rack-and-pinion steering; large wheels and disc brakes; favorable weight distribution; an aerodynamic body; excellent suspension.

DIRECTIONAL STABILITY.

Saabs tend to have excellent directional stability, and largely because they have front-wheel drive. More than half of the weight is in the front of the car, riding on the driving wheels. That improves traction, steering response and resistance to side winds.

The 900's aerodynamic shape helps in that respect, too. Air passing over the car from any direction encounters smooth, rounded surfaces. There are no sharp corners or projections for deflecting airflow and setting up turbulence, and no blunt surfaces for wind to ram against.

Airflow from in front of the car, the normal breeze created by an object moving through air, passes over the Saab 900 smoothly. In fact, because of the shape of the car and the placement of spoilers on the Turbo 3-door model, the airstream presses the car slightly downward and improves traction.

The Saab retains its normal slight understeer in almost all driving situations. That is, its response to the steering wheel is to turn, in an arc which is slightly less than the steering wheel's arc. Oversteer describes an exaggerated response to the steering wheel.

The Saab is designed to be unaffected by the two factors that most frequently alter a car's steering characteristics: hard acceleration and changes in weight distribution. Because it has front-wheel drive and a rigid rear axle, the 900 isn't as affected by hard acceleration in slippery weather as a rear-wheel drive car. Because 60 percent of its weight is borne by the front wheels, the weight distribution is rarely altered to the point where it will change the car's behavior.

In general, weight distribution will change by eight or nine percent between a car's curb weight and maximum load. So a car that divides its weight 54/46 at its curb weight may have the distribution shifted at maximum load, so that the car which normally understeers may begin to oversteer.

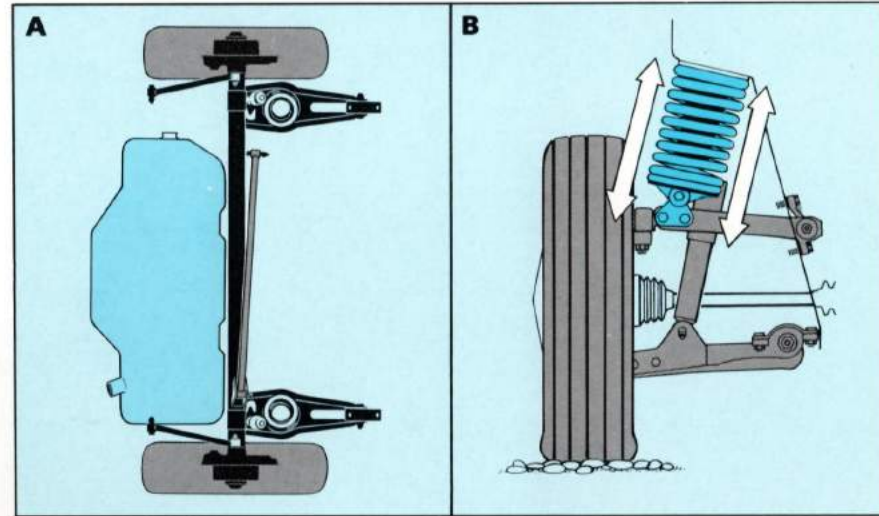


Figure A: The rear axle is a lightweight, rigid tube which keeps the rear wheels parallel at all times. Figure B: The front wheel coil springs are mounted on pivots, so that they always remain straight.

Because of the Saab's wide 60/40 distribution, the maximum change would still leave 51 percent of the weight in front.

The wheels are suspended in front on double wishbones and on pivot-mounted coil springs. By mounting the springs on pivots, Saab engineers assured that the springs will stretch and contract in a straight line.

The rigid rear axle, which is mounted on coil springs, provides precise rear-end geometry with ample suspension travel. That means both that the ride will be comfortable and that the Saab 900 will handle excellently.

Telescoping shock absorbers smooth the Saab's ride, too. On the 900 S and 900 Turbo, the shocks are gas-filled for a more immediate response to the road and they provide a somewhat firmer ride.

While other manufacturers have gone to smaller wheel sizes in recent years, Saab has continued

to fit all its models with 15-inch wheels. The larger wheel provides greater stability and allows us to fit larger disc brakes. The pads of the front disc brakes are made of a semi-metallic, non-asbestos material which outlasts other brake pads. The pads of the rear disc brakes are also made of a non-asbestos material.

One of Saab's early safety innovations was the use of dual, diagonally-opposed hydraulic brake lines. If one of the hydraulic systems fails, the other will still operate one front wheel and one rear wheel, assuring controlled, straightline stopping.

The Saab's handbrakes are real emergency brakes, unlike many "parking brakes" available on other cars. The handbrake operates the Saab's front wheel brakes, where more than half of the car's stopping power is.

SAAB 900 TURBO





HOW DO WE BUILD A CAR STRONG ENOUGH TO PROTECT ITS OCCUPANTS WHEN A CRASH IS NO LONGER AVOIDABLE?

We built the Saab 900 as if we expected you to take it to the most dangerous place on earth.

Which we do. It would be hard to find a place more dangerous than the public highways, where even very good drivers may find themselves involved in an accident at some point.

Inside the Saab, you are surrounded by a padded safety cage that helps protect you from most of the force of a collision. At the front and rear of the car are more steel reinforcements to protect passengers and vehicle. In front of and behind the passenger compartment are areas of programmed weakness that assure that the metal will crumple where it will do the least harm.

In the 1970s, automotive journalists praised the Saab 99 as one of the world's safest cars. The Saab 900 exceeds most safety standards by even wider margins than its predecessor. Of course, the degree of safety of any car, even the Saab 900, depends partly on the prudence and good sense of driver and occupants. The best seat belts in the world won't protect you if you don't fasten them.

We tested the design of the 900 in 30-mph crashes against barriers from angles of 60 degrees, 90 degrees and 120 degrees. The requirements we set for the car were:

- Windows must be retained in their frames.
- Doors would remain shut but would open easily from inside after the crash.

- The hood would remain in position, even after being deformed in the crash.
- Occupants (the test dummies) wouldn't be thrown from the passenger compartment.

The focus of the design that meets those requirements is the safety cage. The steel uprights alongside the windshield and windows of the 900 are unusually strong and they support a steel reinforcement around the edge of the roof. The doorsills, cross-members in the floor and behind the rear seat, and the front bulkhead make up the rest of the safety cage.

To absorb the force of the impact and to make sure that doors will operate after the crash, the

will remain rigid. Steel beams inside the passenger doors strengthen the car and give a degree of protection in side collisions.

There are additional reinforcing beams in the front of the car, extensions of some of the chassis members, which help to protect the engine. In a severe head-on collision, the engine is forced backwards at a downward angle and is stopped by the strong bulkhead between the engine compartment and passenger compartment.

Striker plates on the door locks are equipped with backing plates to help prevent jamming, and the designed weakness of wheel arches and fender flanges facilitate opening of the doors after a crash. The hood is hinged in front

WITHIN THE CAGE.

When a car crashes, there are really two collisions. First, the car hits something and stops. At the



Roof pillars and windshield supports are covered with thick padding to absorb shock from bumps or collisions.

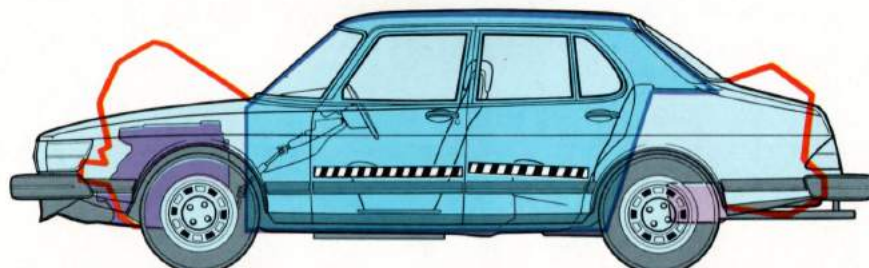
same time, though, the occupants of the car keep going forward until they are either thrown from the car or hit something and stop.

The doors and safety cage of the Saab 900 are designed to protect occupants from the first impact and to keep them inside the car. The remaining problem is to protect them from injury inside the safety cage.

For 1983, we have provided three-point harnesses for four passengers. The position in the middle of the rear seat is provided with a lap belt restraint.

The roof is thickly padded with glass fiber insulation that can absorb a very heavy impact without bottoming. Windshield supports are padded with polyurethane foam. The door handles and other controls are recessed to prevent puncture injuries.

The design of the 900's steering wheel and column is probably



The steel members supporting the roof, floor, sills and windshield form a protective safety cage around the Saab's passengers. Saab was a pioneer in passive safety systems for automobiles.

engineers designed deformation, or "crumple", zones where metal can collapse from the impact without threatening occupants.

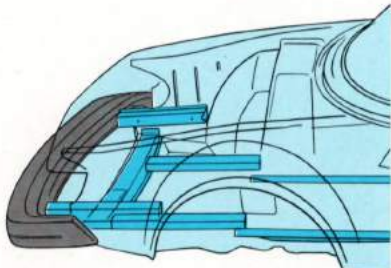
In a head-on or rear-end collision, those crumple zones will give way to soften the impact, along with the softening effect of the Saab's bumpers. The safety cage

and latched at the rear, so that it isn't likely to open accidentally, even if it hasn't been securely closed. It has front and rear reinforcements and a buckling zone in the center, and special arrestor hooks at the rear edge that will prevent its being forced through the windshield in a crash.

the safest in any car in the world. The padded center of the wheel will cushion a significant impact, helping to protect the driver from serious head, neck or chest injury, and the column is designed to gradually give way in a collision with the driver's body.

The steering column is constructed in three sections. The one nearest the driver is a telescoping section inside a steel mesh cage. That section will give way quickly in heavy stress. The second section, joined to the other two with universal joints, is a sheet metal bellows that deflects the steering column in a crash. The third section is a rigid shaft connected to the steering box.

A rear seat passenger who is thrown forward in a crash will, of course, hit the seat in front of him, so Saab has padded the backs of the front seats and made sure that there are no sharp corners or edges.



Welded collision beams help protect the engine and restrain it from being forced backwards in a crash.

SAVING YOUR NECK.

The greatest danger in a rear-end collision is of injury to your neck. The major protection against that is the Saab seat and its integral headrest.

When your car is hit from the rear, you are thrown forcefully

backwards. That backward thrust is arrested by the back of the seat which, in the Saab 900, cushions the impact and supports your back, so that it isn't thrown about by the impact of the crash. The headrest should keep your head from being forced back over the top of the seat.

If the headrest isn't high enough, or supportive enough, your head keeps snapping backwards and down, bending the neck at a sharp angle. When that angle gets to be too sharp, more than 120 degrees, serious neck injury results.

The taller you are, of course, the more subject you are to the danger of having a headrest too low to stop the backward motion. So Saab engineers, in designing the 900's seat, used the tallest test dummies made. Only one percent of all of the people in the world are taller than the test dummies used to test those seats.

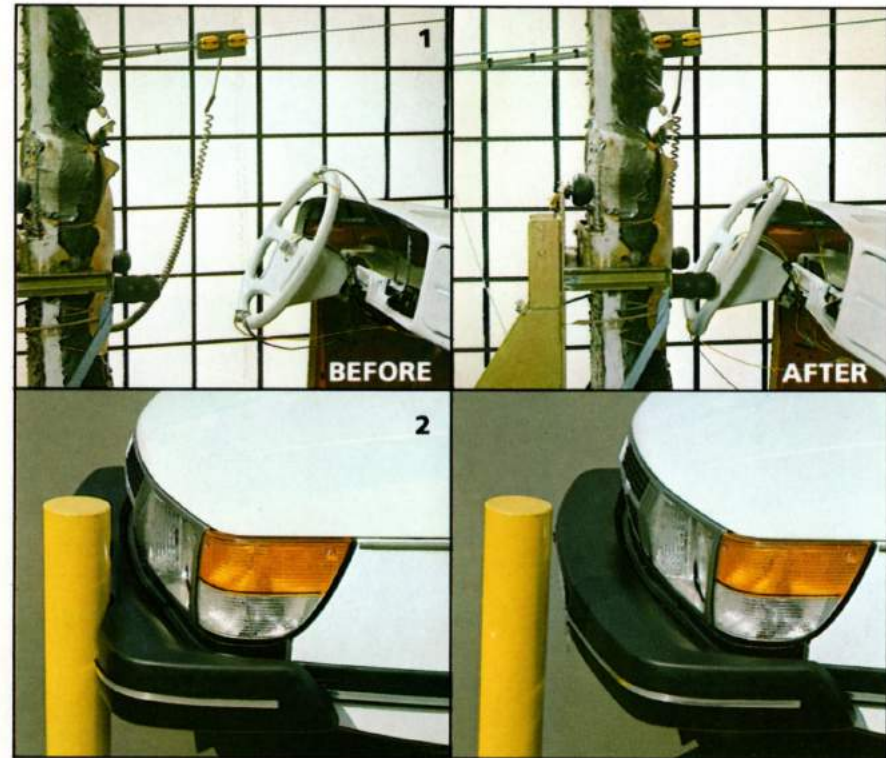
The headrests are made of an energy-absorbing foam molded around a flexible plate. Properly raised to fit the passenger, the headrests will prevent the head from bending the neck to more than a 40-degree angle.

If the Saab is hit from the side, occupants are protected by the steel beams welded inside the doors, by the heavy-gauge steel on the doors and by foam padding inside to absorb the impact's energy.

The Saab's fuel tank is located between the back wheels and under the floor, where there is the least danger of its being ruptured in an accident, and materials inside the passenger compartment are all flame-retardant.

FIGHTING THE FENDER-BENDER.

Most collisions, though, are very minor and don't threaten the



1: The Saab steering wheel will give way in the event of a serious collision, absorbing much of the driver's forward motion, in order to reduce possible injury.
2: The 900's cellular bumpers are self-restoring—not only do they help protect the car from "fender benders," but they will return to their original shape after a moderate collision.

passengers at all. They happen in parking lots and on local streets in slow traffic, and they're responsible for enormous amounts of money being spent in body-repair shops each year.

To protect the Saab against damage from minor accidents of that type, we've fitted the 900 with a self-restoring bumper filled with cellular plastic blocks that absorb the energy of a low-speed collision and then resume their original shape.

The bumpers meet current U.S. standards, but this same type

were fitted several years before the law required them. They are so effective that we equip all Saab 900s with them, no matter where in the world they are sold.

Saab's bumpers give the car substantial protection from the kind of minor collision that accounts for much of the body damage to cars on American roads. Naturally, they don't provide absolute protection; the best defense against that kind of damage is an alert and defensive driving style.



HOW CAN WE CREATE AN INTERIOR THAT WILL ACCOMMODATE FOUR ADULTS COMFORTABLY AND HAVE EXPANDABLE LUGGAGE SPACE, WITHOUT DICTATING AN OVERSIZED EXTERIOR?

From the outside, the Saab 900 isn't a very large car. It has the same overall dimensions as many compact automobiles.

Yet it has as much luggage space as the largest American luxury sedan. Moreover, the Saab's luggage space can be quickly and easily expanded until the car has as much usable carrying capacity as a small station wagon.

Part of the reason for the generous interior space is the lack of a long drive shaft tunnel through the floor. Since the Saab uses front-wheel drive, there's no drive shaft running beneath the passenger compartment and stealing floor space. By eliminating the hump in the middle of the floor, we provided much more legroom for all the occupants and made the car much more comfortable.

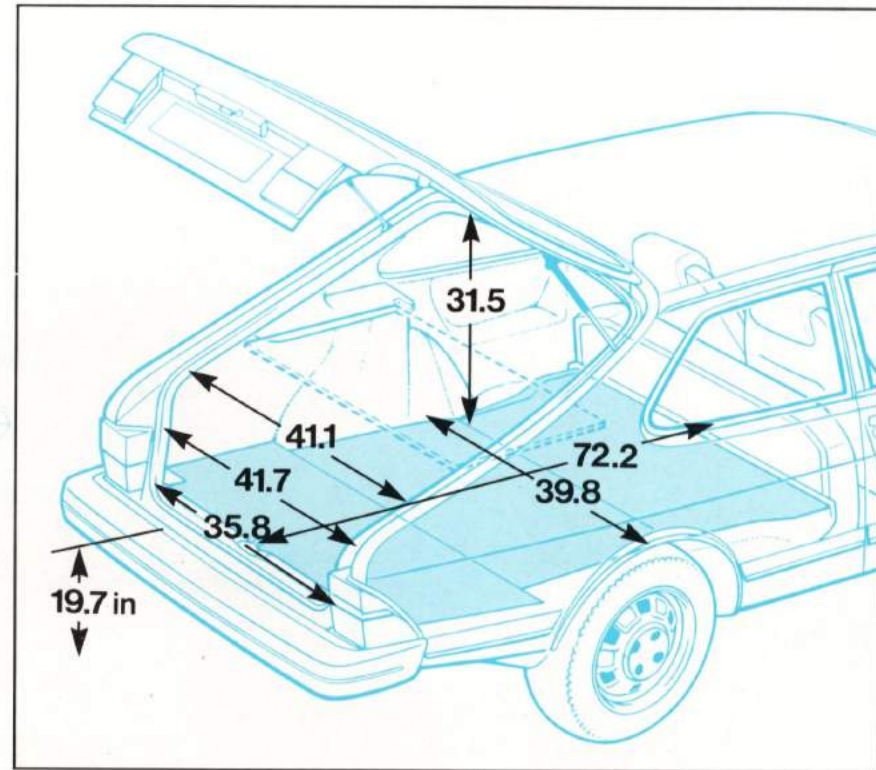
The body design in both three-door and four-door styles allows plenty of headroom for rear seat passengers, an unusual treat especially in a hatchback design.

Saab's three-door sedan was one of the first hatchback styles introduced by an auto manufacturer and it combines many of the virtues of a sedan, coupe and station wagon. It's more aerodynamically "slippery" and less bulky than a conventional wagon but still provides lots of cargo space.

The four-door body style is preferred by lovers of more traditional sedans but it too has an expandable cargo deck for occasional hauling jobs.

Without any expansion at all, the three-door body provides a 21.3-cubic foot trunk; 14.9 cubic feet by SAE standards, which reflect the amount of standard-sized luggage that can be fitted in the space. The figures for the four-door model are 21.8 cubic feet and 14.2 cubic feet SAE.

By lowering the rear seats, an operation which requires only a few moments and no tools, the cargo area is more than doubled to 56.5 cubic feet in the three-door and 53.0 cubic feet in the four-door. The large hatch on the three-door model and the low sill make loading and unloading bulky packages much easier.



The Saab 900 has greater luggage capacity than most larger cars. Its cargo space can even be expanded to the size of many station wagons. The three-door model, shown here, provides a 21.3 cubic foot trunk, expandable to 56.5 cubic feet when the rear seats are lowered.

Under a hatch on the floor of the luggage space is a well for the spare tire which also has enough room for carrying a spare fuel can, jack, tools and emergency gear.

Other convenient carrying space inside the car includes the

lockable glove compartment, pockets on the insides of the front doors, and recesses for coins and other accessories in both the center console and on the dashboard.

SAAB 900



SAAB 900

WHY CHANGE A GOOD THING?

We didn't stop thinking about the Saab 900 after the first cars rolled off the assembly line. We keep refining our ideas, making an outstanding car even more outstanding.

The most dramatic change we made for the 1983 model year is the application of the Automatic Performance Control to the Saab 900 Turbo. Actually, we didn't wait for a now model year to start using the APC system. It was fitted on Turbos during the 1982 model year, as soon as it had been developed and tested.

The APC will undoubtedly have the same impact on turbo-charger design that the turbo-charger itself had on engine design. It improves fuel economy, performance and engine durability and reliability.

But engines aren't the only thing we think about. There are improvements throughout the 1983 Saab 900s. Some of them are obvious as you look at the photographs of new Saabs in this brochure. New paint colors and upgraded interiors. Bronze-tinted windows. New parking lights between the headlights and the grille.

Other changes are less obvious but nevertheless important. For example, we've recalibrated our Lambda emissions control system to efficiently dispose of hydrocarbon wastes, carbon monoxide and nitrous oxides.

The front brake pads on the 1983 Saab will be longer-lasting because we've made the inner and outer pads on the disc brakes of a semi-metallic, non-asbestos material. Semi-metallic material was used before on the outer pads only and proved to be more durable than other materials.

Two rear seat passengers now get three-point shoulder safety harnesses. The middle position of the rear seat, which is used less frequently than the other two, is fitted with a lap belt.



1: Central locking system for 900S/Turbo 3-door models. 2: Protective belt line molding. 3: Simplified latch and fold-down mechanism for rear seat. 4: Bronze-tinted windows. 5: Increased rearward travel for driver's seat. 6: New front parking lights.



OPTIONS AND ACCESSORIES.

Saab owners tend to be very individualistic people. So, even though they appreciate the intelligence that has gone into their car's design, they almost always add some personal touch.

Whether you want to squeeze a little more performance out of your new Saab, or make it look more distinctive, or add a terrific sound system, the best place to start is at your Saab dealer.

The car at the right, for example, was "customized" entirely with accessories that are available from authorized dealers: Shelby wheels; rear louver; pop-top sunroof; wraparound rear spoiler; trailer hitch; custom striping (available in combinations of charcoal and silver, green and silver, blue and silver, and red and maroon); mud flaps; and antenna.

Accessories displayed on the opposite page are:

1. Fog Lights.

Twin quartz-halogen beams, with integral flip-up covers. Includes all mounting hardware and dashboard switch.

2. European-style Sedan Spoiler.
Rear spoiler for the 4-door Saab, to give it a European flair.

3. Magik-Rak.

The Saab Magik-Rak is a sleek system of stainless steel tracks that allows you to carry bicycles, skis or cargo on your roof. When the Magik-Rak is not in use, it virtually disappears. Fits standard or sunroof models.

4. Speed Control.

Automatically reaches and maintains a pre-set speed, for maximum fuel economy and relaxed driving on long highway trips.

5. Sony XR-35 AM/FM Stereo Cassette.

A sophisticated sound system for your car, features automatically reversing cassette deck, Dolby noise suppression. Output is 4 watts per channel, on 4 channels. Receiver has three-band step equalizer.

6. Sony XS-43 Speakers.

Triaxial, 4" x 10" speakers deliver superior bass response, excellent high, and medium frequency response.



7. Blaupunkt 3001.

Electronic AM/FM stereo tuning with 12-station pre-set. Auto-reverse cassette deck with sendust alloy heads. Dolby noise reduction on tape and tuner, driving a separate 4 x 14-watt amp.

8. Saab Logo or Turbo Logo.

On belt buckles, tie tacks, money clips and other personal jewelry items.

9. Saab Vest.

Fiber-filled for warmth on brisk days, allows free, comfortable movement.

10. Rally Jacket.

Good-looking, comfortable jackets feature lightweight polyester filler in water-resistant nylon shells. With Saab or Turbo logos.

11. Travel Accessories.

All your clothing and gear for a long weekend can fit into this handsome Saab nylon travel bag. And for cool nights, curl up under the plush Turbo-logo blanket.

THE SAAB HERITAGE.

Saab has had an impact on the development of automotive technology that is out of all proportion to our size and age. We are a relatively small company and a young one. Our first production car rolled off the line in 1950 and today we produce about 90,000 automobiles a year for the worldwide market.



Nevertheless, we have consistently led the field in innovative design, and other manufacturers have followed our lead in introducing front-wheel drive, aerodynamic bodies, driver comfort systems, safety systems, and now turbocharging. Not only other manufacturers; time and again, the innovations of Saab's engineers have been legislated into safety requirements at home and in countries where we export our cars.

Our leadership stems from an early decision to set aside conventional wisdom and reinvent the car. The first Saab automobile was designed and built by aircraft engineers of Svenska Aeroplan AB. The aircraft manufacturing company, after developing military aircraft during World War II, decided to apply its advanced

technical capabilities to a new product. The first example of that product, introduced as a prototype in 1946, was the Saab 92.

It was a unique car for its time. The body was aerodynamically slippery, like an aircraft's, so it used fuel economically. It was lightweight but very strong and the front wheels were driven. The Saab 92 reflected a concern with safety and economy that was unusual in the late 1940s and 1950s.

Four years later, when the first production models became available, the car proved its worth immediately in one of the toughest arenas of motor sport by winning Sweden's major winter rally three weeks after production began.

THE ULTIMATE TEST: ROAD RALLYING.

From one model change to another, Saabs have proven themselves in that same arena. When we began building, we began rallying. One reason, obviously, was to make the car known to the public. But a more important reason was to test our ideas and designs in a demanding and realistic situation.

International rallying is unlike circuit racing in that it is done on everyday roads and with cars developed from standard production models, rather than with exotic vehicles that are not used in daily driving. It's unlike the American-style rally in that it is a performance contest instead of a point-to-point navigational exercise.

A single rally, such as the East Africa Safari Rally, may require thousands of miles of nonstop driving through harsh weather conditions and over surfaces that include dirt, gravel, sand, snow, ice, mud and rock. It puts stresses on a

car and driver that would not normally be matched in years of daily driving.

Saabs have distinguished themselves in international rallying, whether as part of a factory-sponsored team or in the hands of independent enthusiasts.

Our first major victory came in 1952, when Greta Molander won the women's division at the Monte Carlo Rally. In 1962 and 1963, Erik Carlsson won Monte Carlo overall. He also won the famous British RAC Rally in 1960, 1961 and 1962.

Carlsson's relentless flogging of his cars taught us a lot about building a tough vehicle. Rallying led us directly to the use of disc brakes as standard equipment, to reinforced gearboxes, better cooling, wider wheels, efficient lights. It taught us the importance of driver comfort and control accessibility.

One of Carlsson's favorite anecdotes illustrates both the staying power of the Saab and the demands of rallying:

"In the 1964 Safari Rally, we



became stuck in a mud-pool. We got out of the car and rolled it over four times until it was back on solid ground. The only results of this procedure were two small dents—one on the front door and the other on the roof.

"Despite this small incident, we were second across the line in Nairobi. But nobody believed us when we told them our story. So we turned the car over onto its roof outside Nairobi City Hall, rolled it back onto its wheels again, got into the car, started it and drove away.



"During the prize ceremony at City Hall, the winning crew did not want to be outdone. They took their car onto the stage and succeeded in turning it upside down. However, they couldn't roll it back onto its wheels again and all the oil and battery fluid ran out onto the floor. It had to be carried out and it cost \$10,000 to repair the floor".

Most of the manufacturers who enter international rallies spend a lot of time and money modifying their competition cars for specific contests. Saab doesn't

do much of that; we tune the engine, reinforce the springs, strip unnecessary weight from the car and use wider wheels.

Aside from that, the Saabs that have compiled such a long list of rally victories have been identical to the Saabs you can buy from our dealers.

A DIRECT LINEAGE.

The basic idea of the Saab 92 was continued and gradually modified for 30 years. The last Saab 96 that was built, in 1980, looked very similar to its ancestor, although it incorporated most of what we had learned about automotive engineering in that time and was as up-to-date as any of its contemporaries.

Today's 900 series is among the most technologically advanced cars of the 1980s. Yet it, too, shows a clear debt to that first design.

There is the same concern with both active and passive safety; the same commitment to front-wheel drive and aerodynamic efficiency. Most of all, there is the same reflection of our determination to set aside the conventional wisdom and reinvent the automobile to meet the conditions of the real world of today.

The direct ancestor of the Saab 900 is the Saab 99, which we introduced in 1967. It was intended to meet the demand for a car which was at once roomy and compact, robust and comfortable. The resulting design was a Saab larger than our V-4 Saab 96, but still compact and economical.

The thing which struck automotive journalists more forcibly about the Saab 99 was the enormous attention to safety in the



car's design. That attention has been carried over into the engineering of the Saab 900.

That concern with safety has led to many of our most important innovations: dual, diagonally-opposed hydraulic lines for brakes; a heated driver's seat; a self-repairing bumper; a steel safety cage surrounding the driver and passengers.

Almost every year, some other manufacturer announces the incorporation into his cars features that Saab has pioneered.

The Saab Car Division is one of four major components of Saab-Scania AB. The Scania Division, which builds trucks and buses, has been making road vehicles since the beginning of the century. It is today one of the world's leading manufacturers of diesel-engined

vehicles. More than 90 percent of the division's production is exported to 50 countries outside of Sweden.

The Aerospace Division, which gave birth to the Car Division, continues to be one of Europe's leading manufacturers of military aircraft. Its products include the Saab 37 Viggen, an advanced fighter, interceptor and reconnaissance aircraft; ballistic missiles; the Viking, Sweden's first research satellite; and the Saab-Fairchild 340, an advanced 34-passenger aircraft scheduled to go into service in 1984.

The Nordarmatur Division makes advanced fittings and instruments for process control.

TECHNICAL SPECIFICATIONS, SAAB 900, 1983.

ENGINE.

Four-cylinder, in-line, overhead camshaft.
Bosch CI (continuous injection) mechanical fuel injection.

Displacement: 121 cu in/1985 cc.

Cylinder bore: 3.54 in/90 mm.

Piston stroke: 3.07 in/78 mm.

Compression ratio: 9.2:1, normally aspirated.
8.5:1, Turbo.

Horsepower, SAE Net: 110 hp/81 kW @ 5250 rpm, normally aspirated.
135 hp/100 kW @ 4800 rpm, Turbo.

Peak torque: 119 ft lbs/161 Nm @ 3500 rpm, normally aspirated.
160 ft lbs/217 Nm @ 3500 rpm, Turbo @ 87 octane.
172 ft lbs/233 Nm @ 3500 rpm, Turbo @ 92 octane.

Recommended octane rating: 87 minimum (pump rating).

Fuel tank capacity: 16.6 U.S. gal./63 liters.

ELECTRICAL.

Battery: 12 V, 60 Ah, maintenance-free.
70 A Alternator with integral voltage regulator.
Breakerless electronic ignition, Hall-effect.

DRIVETRAIN.

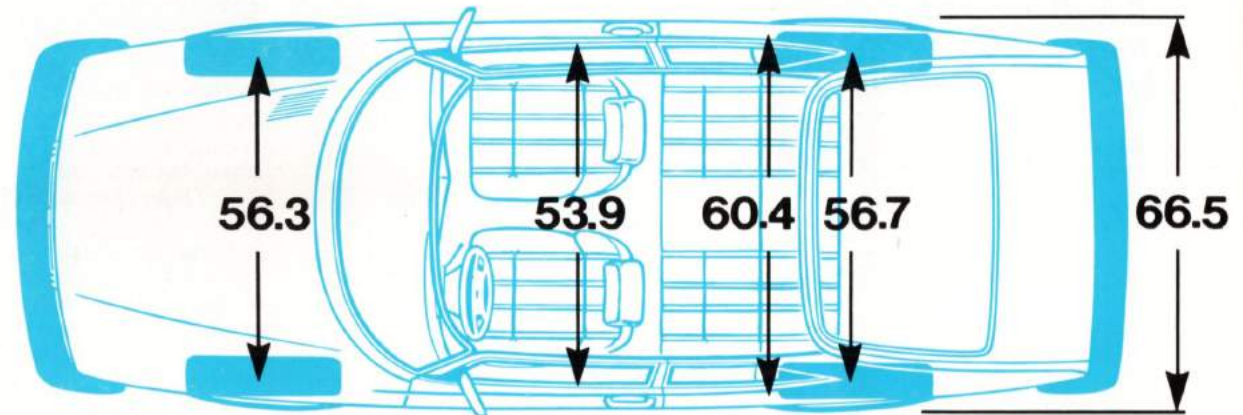
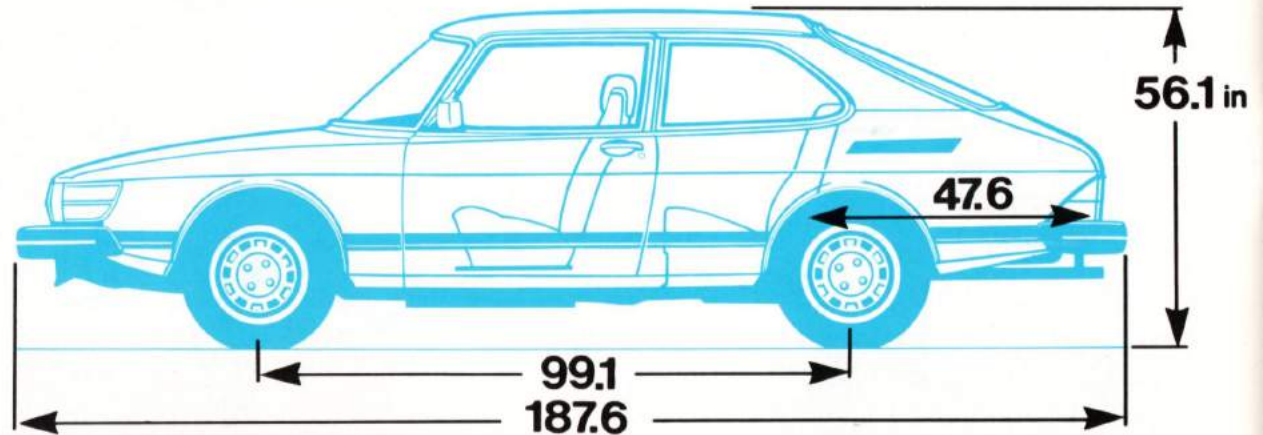
Front-wheel drive.

Five-speed manual transmission with single dry plate, Borg & Beck clutch.

Gear ratios: 1st 4.53:1
2nd 2.56:1
3rd 1.72:1
4th 1.24:1
5th 1.00:1

Final drive 3.67:1, normally aspirated and Turbo.

Primary ratio 0.78 normally aspirated.
0.84 Turbo.



Three-speed automatic, built by Borg-Warner.

Gear ratios: 1st 2.39:1

2nd 1.45:1

Drive ... 1.00:1

Final drive 3.67:1, normally aspirated and Turbo.

Primary ratio 0.93 normally aspirated.
0.88 Turbo.

WHEELS AND TIRES.

Disc brakes with asbestos-free, semi-metallic inner and outer brake pads on front wheels. Asbestos-free disc brakes on rear wheels.

Independent front suspension comprised of transverse wishbones, coil springs and hydraulic telescoping shock absorbers.

Lightweight rigid axle in rear. Coil springs; hydraulic telescoping shock absorbers.

Rack-and-pinion steering, 3.65 turns lock-to-lock.

Turning circle: 33.8 ft/10.3 m.

Tires: 900, 900 S, 900 Turbo 4-door—185/65 SR 15.

900 Turbo 3-door—195/60 HR 15.

CURB WEIGHTS.

900: 2600–2630 lbs, 3-door.
2640–2680 lbs, 4-door.

900 S: 2710–2750 lbs, 3-door.
2750–2800 lbs, 4-door.

900 Turbo: 2790–2850 lbs, 3-door.
2820–2880 lbs, 4-door.

STANDARD EQUIPMENT.

All models:

Power-assisted steering. Four-spoke steering wheel with padded rim and impact-absorbing center pad. Energy-absorbing steering column. Impact shield below instrument panel. Child-proof safety locks for rear doors. Rheostat-controlled green lighting for instrument panel. Three-point safety harness for four seats. Lap belt for rear seat center passenger. Day/night interior rear-view mirror.

Econometer-tachometer, trip meter, quartz crystal electric clock.

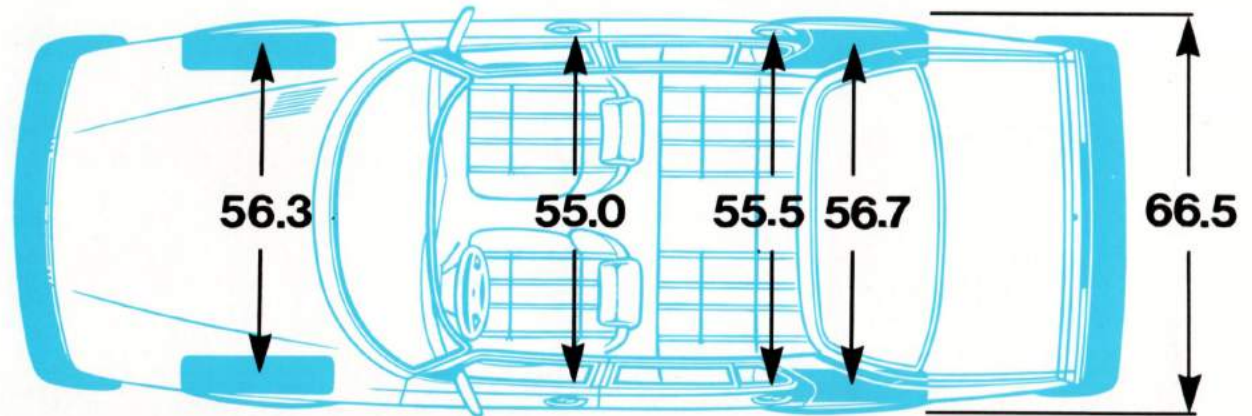
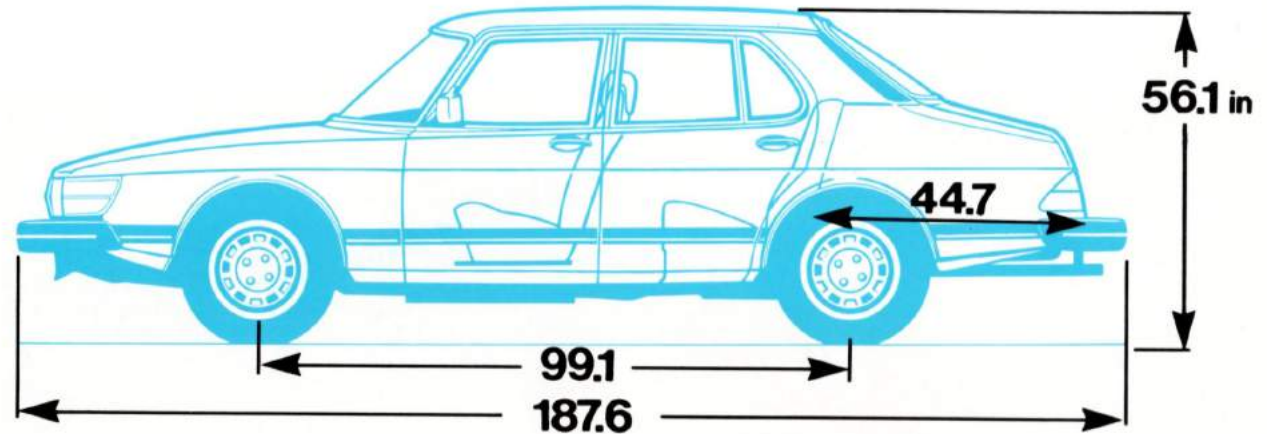
Stereo speakers mounted on instrument panel.

Side-guidance reversing lights. Large outside rear-view mirrors with anti-dazzle treatment. Hazard warning lights. Reflectors on driver's-side door edges.

Non-dazzle interior lighting. Ignition key light. Map-reading light. Glove compartment lighting. Luggage compartment lighting.

Electrically-heated rear window defogger.

Front seats with lumbar support and adjustable headrests; backrest rake adjustment.



Driver's seat adjustable for height and tilt.
Bronze-tinted glass on all windows.
"Self-restoring" bumpers.

900 S and 900 Turbo only:

Air conditioning.
Deluxe velour interior.
Electrically-heated front seats.
Folding center armrest in rear.
Sliding steel sunroof.
Electrically-operated exterior mirrors.
Central locking system (4-door models).

Turbo only:

Sony XR70 AM/FM stereo cassette radio with four-speaker system and electric antenna.
Turbo boost gauge.
Digital clock.
Halogen headlights.
Front and rear spoilers on 3-door model.

BODY COLORS AND INTERIORS.

Cherry Red and Ivory Saabs will be appearing on the street in 1983, showing off our two newest body colors. And with the addition of a new Sierra Tan color for interiors, Saab buyers now have a choice of 11 different exterior and

four interior colors.

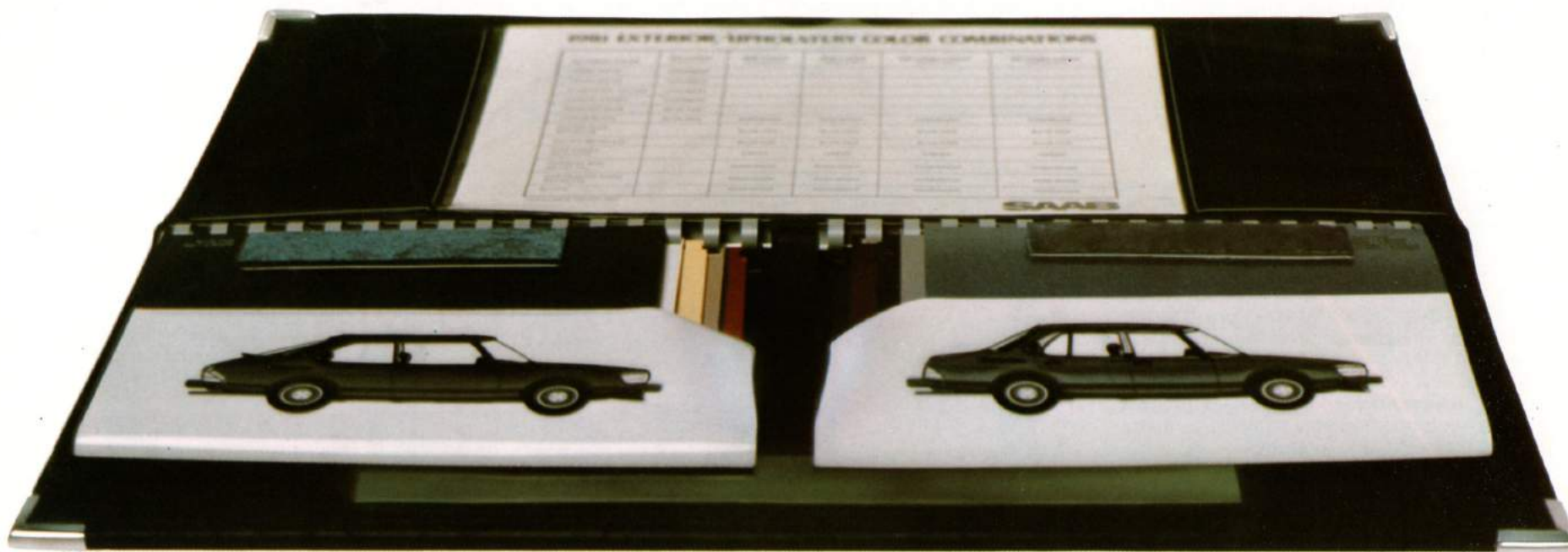
Not all models will be available in all colors, but the selection is wide enough to assure you of a car that pleases your eye as well as your desire for practical and exciting transportation.

The full line of body colors available in 1983 includes: Ivory;

Maroon; Cherry Red; Admiral Blue; Cirrus White; Indigo Blue Metallic; Black; Walnut Brown Metallic; Silver Metallic; Slate Blue Metallic; Pine Green Metallic.

Interior colors are Sierra Tan, Cashmere, Blue Fox and Bokhara Red.

Photographs rarely do justice to body colors, so we invite you to visit your Saab dealer and inspect his book of exterior and upholstery color combinations.



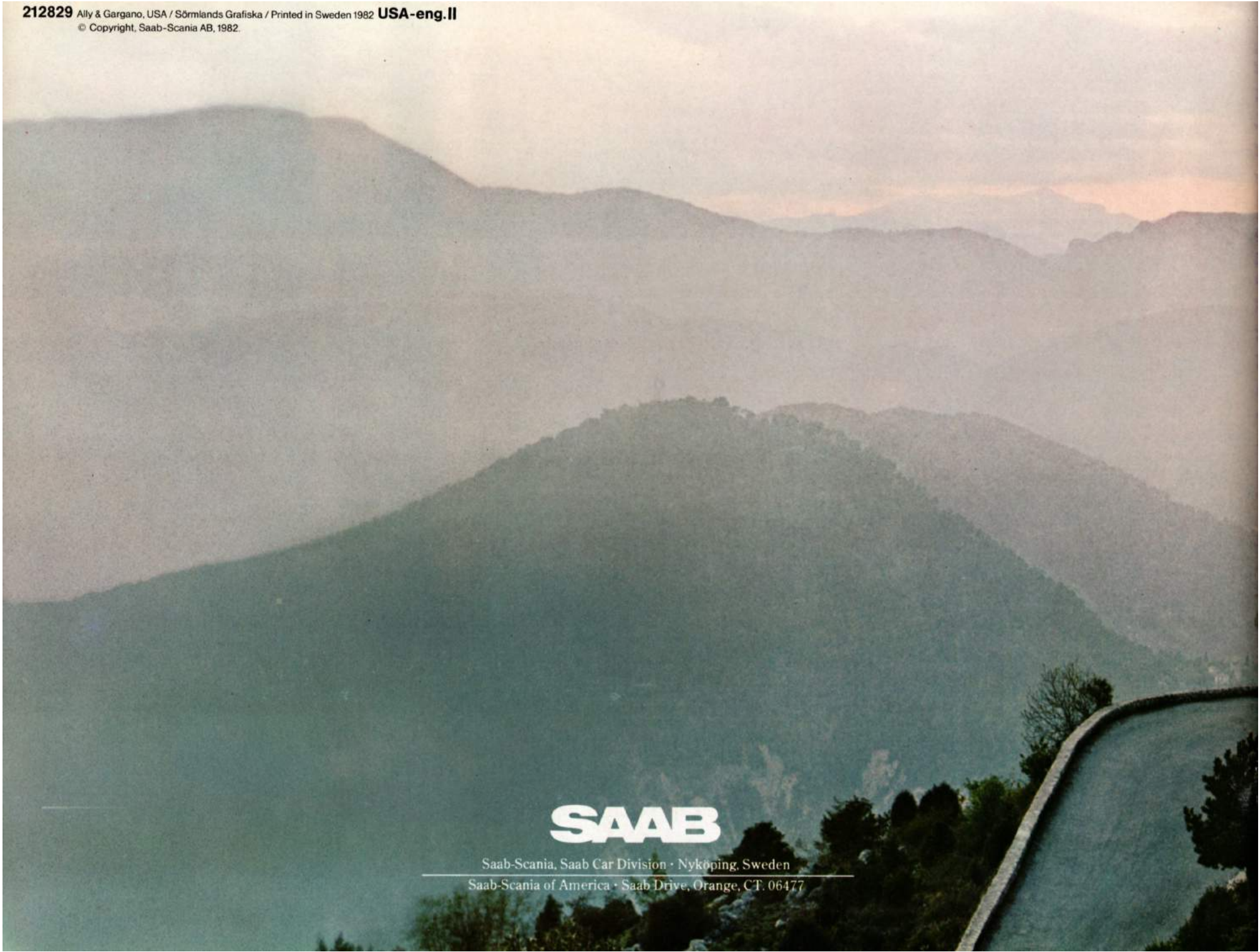
AN IMPORTANT WORD ABOUT THIS BROCHURE.

We hope you find this brochure helpful, as we have tried to make it as comprehensive and factual as possible. However, since this brochure was printed, some of the information you see within may have been updated. Also, some of the equipment described in the brochure is available at extra cost. Further, certain photographs and illustrations in the brochure are also common to editions published for other

markets. Consequently, certain details shown in these photographs or illustrations may not be available in the U.S. market.

Finally, we reserve the right to make changes at any time, without prior notice, in prices, colors, materials, equipment, specifications and models, including the discontinuation of models. Check with your Saab dealer for complete and up-to-date information before ordering. International and Diplomat Sales (IDS) available. Your dealer can supply information.





SAAB

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