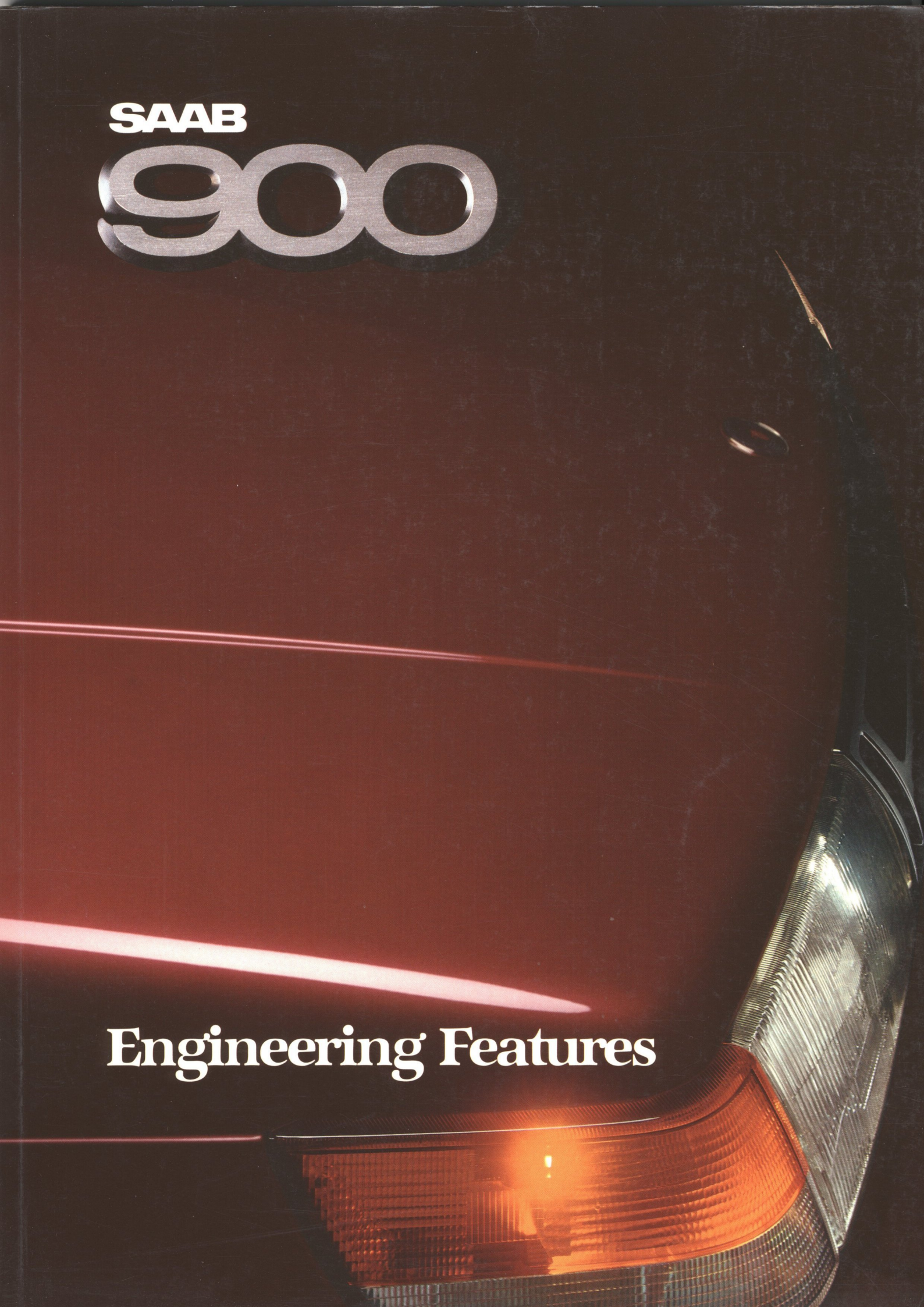
SAAB

900



Engineering Features

SAAB SUBARU

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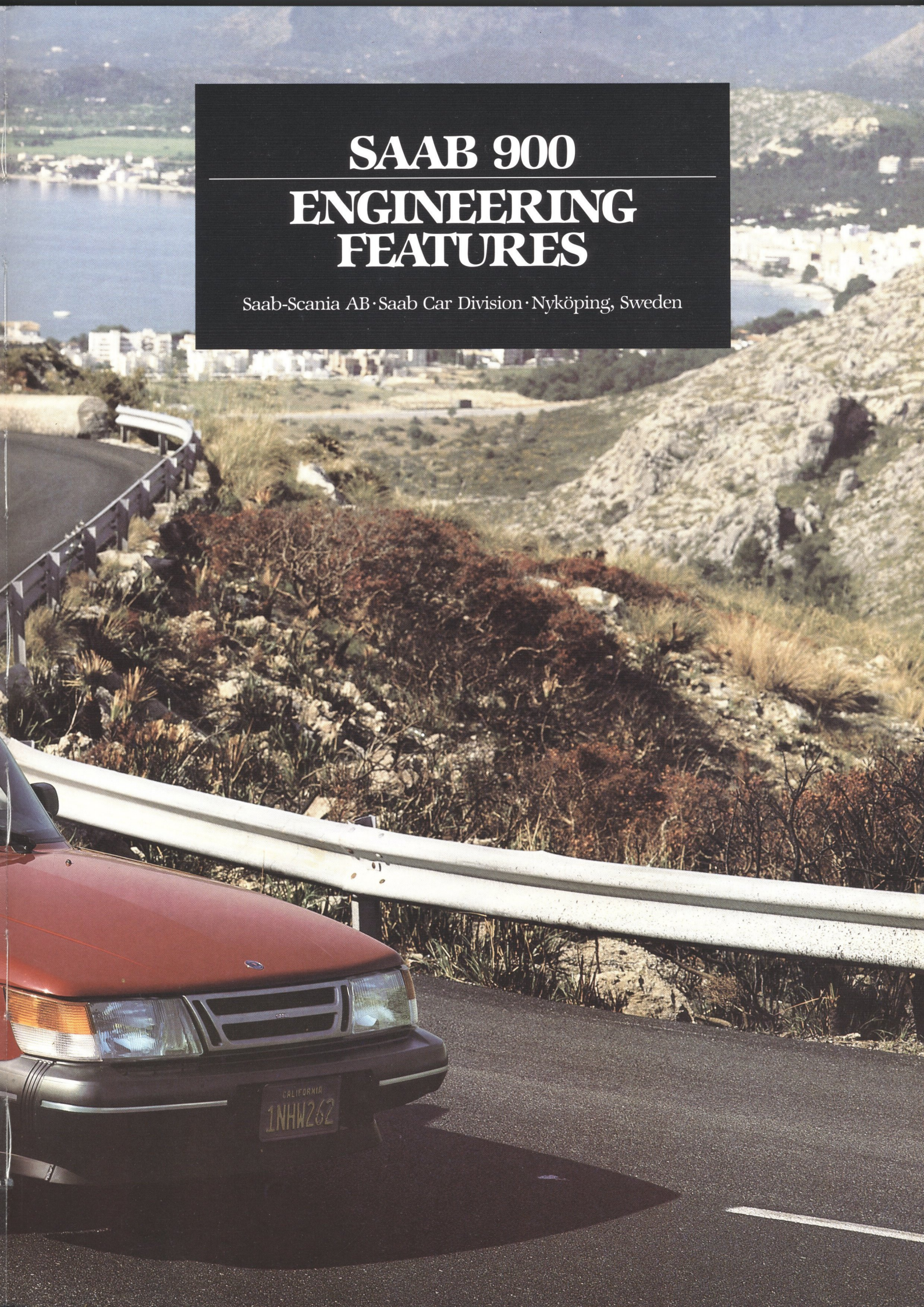
SAAB 900
ENGINEERING FEATURES


turbo



SAAB 900
ENGINEERING FEATURES

Saab-Scania AB · Saab Car Division · Nyköping, Sweden

Saab-Scania AB
Saab Car Division
Nyköping, Sweden

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 this 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.

Contents

Saab 900

The principle guiding the development and design of the Saab 900 line is that the form must be governed by the functional requirements. Every detail of the car demonstrates that we have been faithful to this principle. Saab cars have always been based on the same fundamental philosophy, to which they owe their high standard of roadholding, comfort, safety and practicality.

The 900 line includes several model series, each of which represents a distinct performance class: the Saab 900 with the 110 bhp mechanical fuel injection engine, the Saab 900S with the 125 bhp 16 valve electronic fuel injection engine, the Saab 900 Turbo with the 160 bhp 16 valve turbocharged engine, and the Saab 900 Turbo SPG with the 165 bhp 16 valve turbocharged engine.

The long succession of recent accolades confirms the competitiveness of the Saab 900 line. In Japan, for instance, it has received a design award from the Ministry of International Trade and Industry (MITI). One of the largest British motoring journals has awarded the Saab 900 Turbo 16 SPG the title of the "Best director's car". In the largest West German motoring journal, the readers have voted the Saab 900 as the best medium-class imported car for six years in succession.


turbo

PERFORMANCE

"Part of the engine's good nature is its silky smoothness: the Saab sixteen-valve never emits a coarse quiver or a discordant grind."

(CAR AND DRIVER, U.S.A.)

The basic Saab four-cylinder, two-liter engine can be fitted with the equipment necessary to meet a wide variety of performance requirements. When equipped with a turbocharger and four valves per cylinder, for instance, the power and torque of the engine will match those of much larger six-cylinder and eight-cylinder engines.

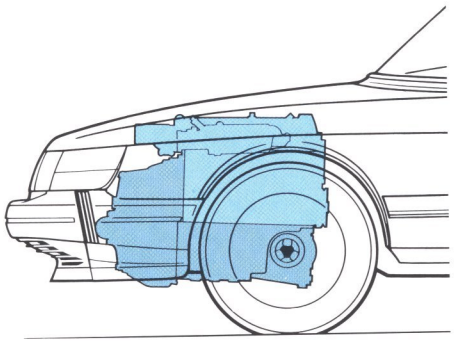
Engine

All Saab 900 models are powered by a liquid-cooled, four-cylinder, in-line engine with a swept volume of two liters. The engine is integrated with the clutch, gearbox and differential into a lightweight power unit that occupies a minimum of space.

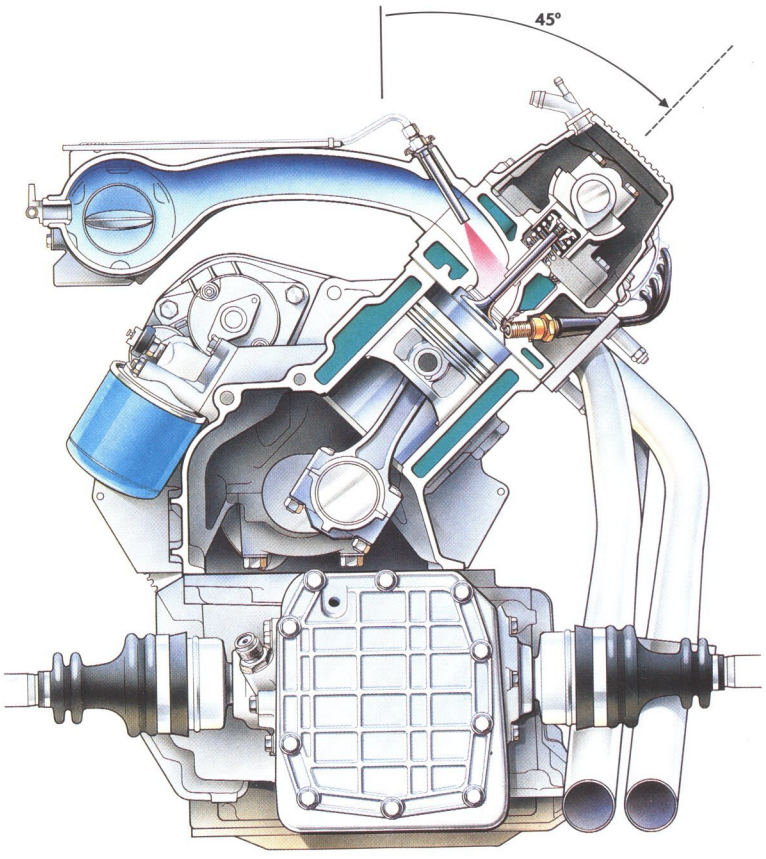
The combustion chambers are of cross-flow type, with the intake and exhaust ports located on opposite sides of the cylinder head. This arrangement ensures good gas flow and cooling of the cylinder head at high engine speeds. Moreover, the operating temperature of the inlet air is reduced, which results in stable, reliable performance, even at high engine loads.

The ability of an engine to run at high speeds is largely dependent on the piston stroke. Since the piston stroke of the Saab engine is only 3.07 in (78 mm), the mean piston speed and mass forces are moderate, even at high engine revolutions. The Saab 900 can take sustained high-speed cruising in its stride.

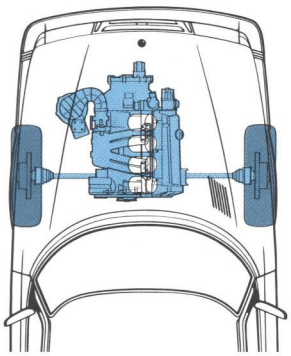
The overhead camshaft actuates the cam followers directly, without intervening push-rods and rocker arms. The camshaft is driven by a pressure-lubricated chain—a silent, reliable and maintenance-free drive arrangement.



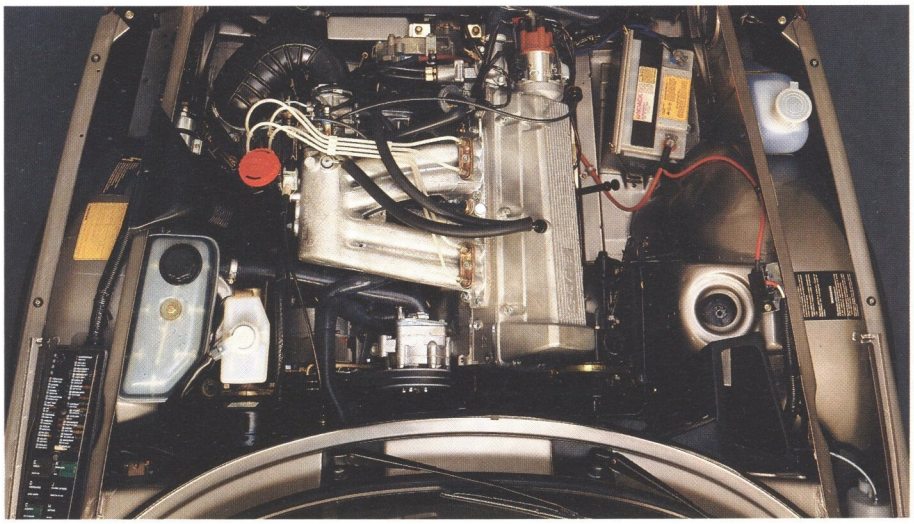
On the Saab 900, the engine output is transmitted across a primary chain transmission at the front of the engine to the gearbox and differential located below the engine and integrated with it. This design allows good cooling of the clutch as well as more interior space.

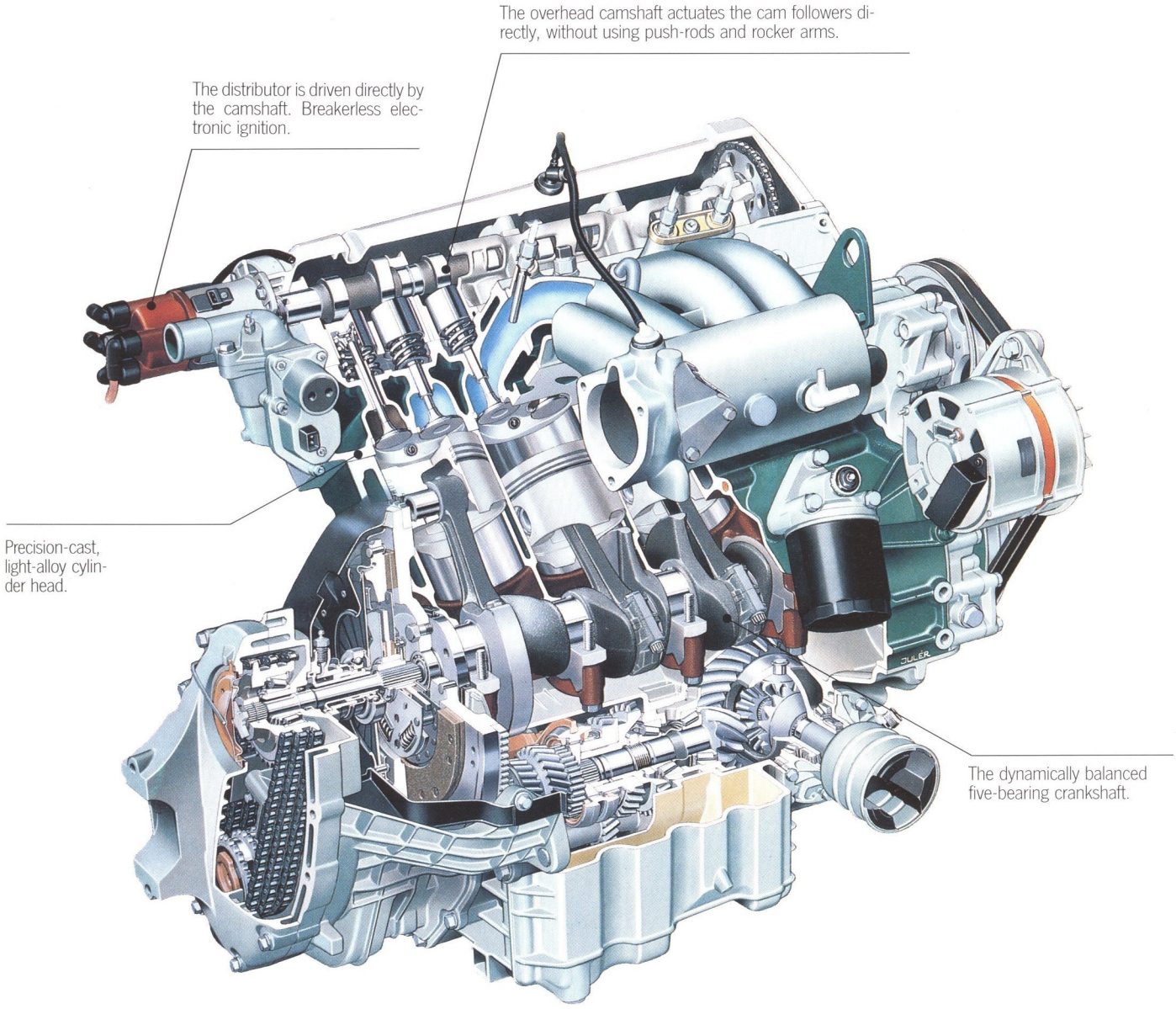


To lower the center of gravity and allow for a low hood line, the engine is sloped at 45 degrees. The cylinder head is of cross-flow design and supports a direct acting overhead camshaft.



The Saab 900 has front wheel drive and the engine is mounted longitudinally.





The basic Saab power unit is a two liter, four cylinder in-line engine. The picture shows an 8 valve engine with mechanical fuel-injection.

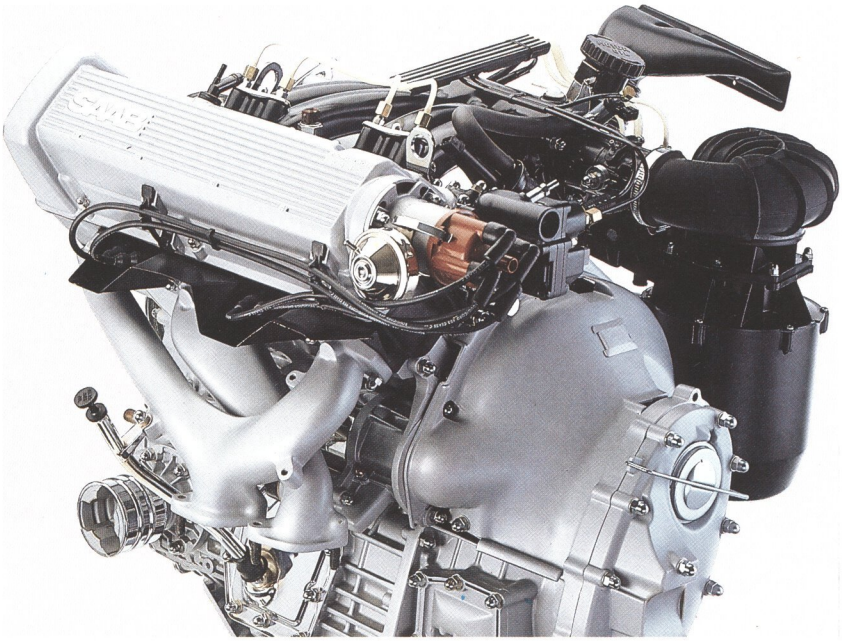
Four performance classes

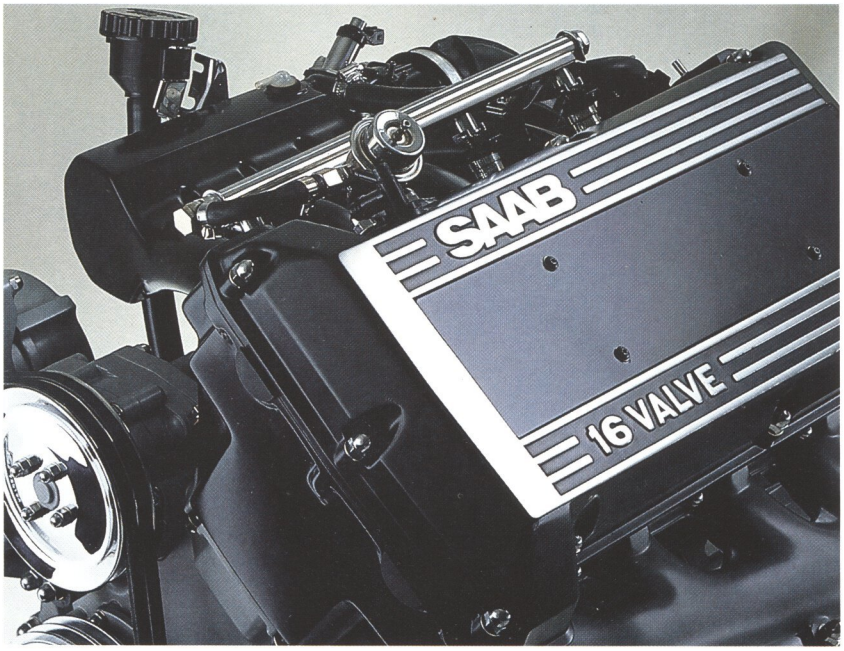
Our basic engines are available in four performance classes—110 bhp, 125 bhp, 160 bhp and 165 bhp. All engines deliver their peak torque at relatively low revs, and the torque remains high over a wide range of engine speeds.

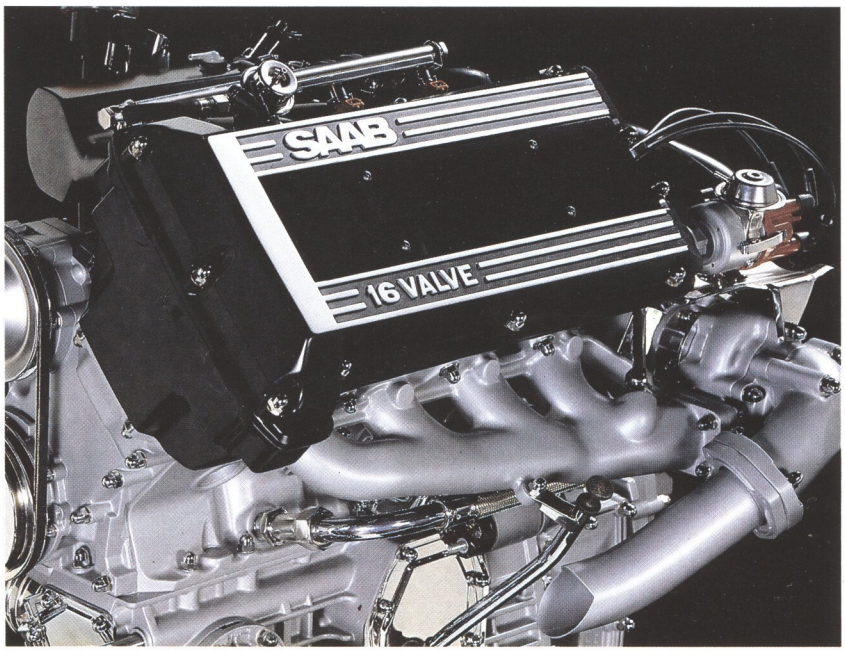
This minimizes the driver's need to change gears since excellent torque characteristics exist over a range of engine revs.

Although high top speeds and good acceleration from rest are important ingredients of high performance, good low-speed torque and swift overtaking acceleration are far more vital. So is a high cruising speed, mile after mile.

The Turbo engine offers the same acceleration and top speed of many six-cylinder or eight-cylinder engines, but without their inherent drawbacks of high weight, unwieldy bulk, many moving parts and high fuel consumption.







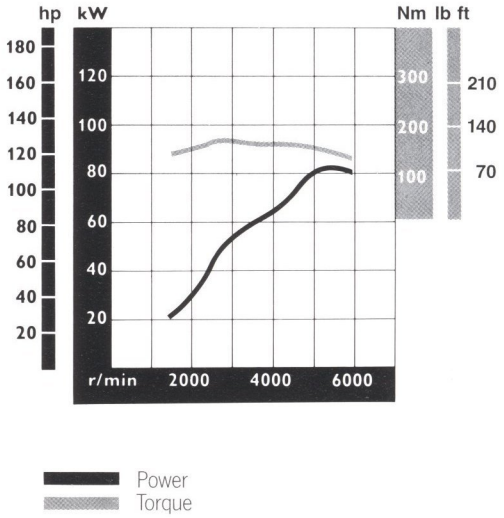
"The engine is refined and has uniform traction, without marked peaks or vales."

(TEKNIKENS VÄRLD, Sweden)

Fuel injection engine

A mechanical fuel injection system ensures much more efficient consumption of the fuel under varying running conditions. Excellent cold-starting properties.

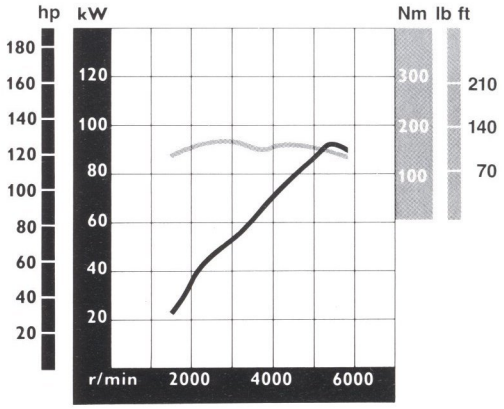
Model series: Saab 900.
Rating, SAE:
110 bhp (81 kW) at 5250 rpm



16 valve fuel injection engine

Electronic fuel injection system. Ensures much more efficient consumption of the fuel under varying running conditions. Excellent cold-starting properties.

Model series: Saab 900S.
Rating, SAE:
125 bhp (92 kW) at 5500 rpm

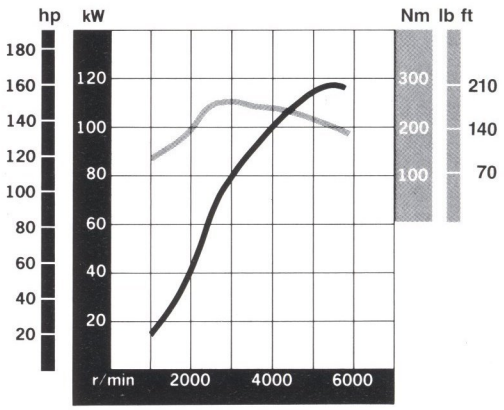


16 valve turbocharged engine

Turbocharged, 16 valve fuel injection engine with intercooler and APC system. Impressive overtaking acceleration—even from low engine speeds. Very high cruising and top speeds.

Model series: Saab 900 Turbo and Convertible.
Rating, SAE:
160 bhp (118 kW) at 5500 rpm

Model series: Saab 900 Turbo SPG.
Rating, SAE:
165 bhp (121 kW) at 5500 rpm



The Saab 16 valve engine for everyday motoring marks a new milestone in the development of internal combustion engines. It is a further development of the thoroughly proven, two-liter engine.

The 16 valve engine

Engines with four valves per cylinder have long been used to power rally and competition cars—including Saab cars. But the Saab 16 valve engine is not a competition engine designed for the highest possible performance within a narrow range of engine speeds. On the contrary, it is an everyday "workhorse", with good low-speed performance, and has been optimized for the best possible economy, durability and reliability.

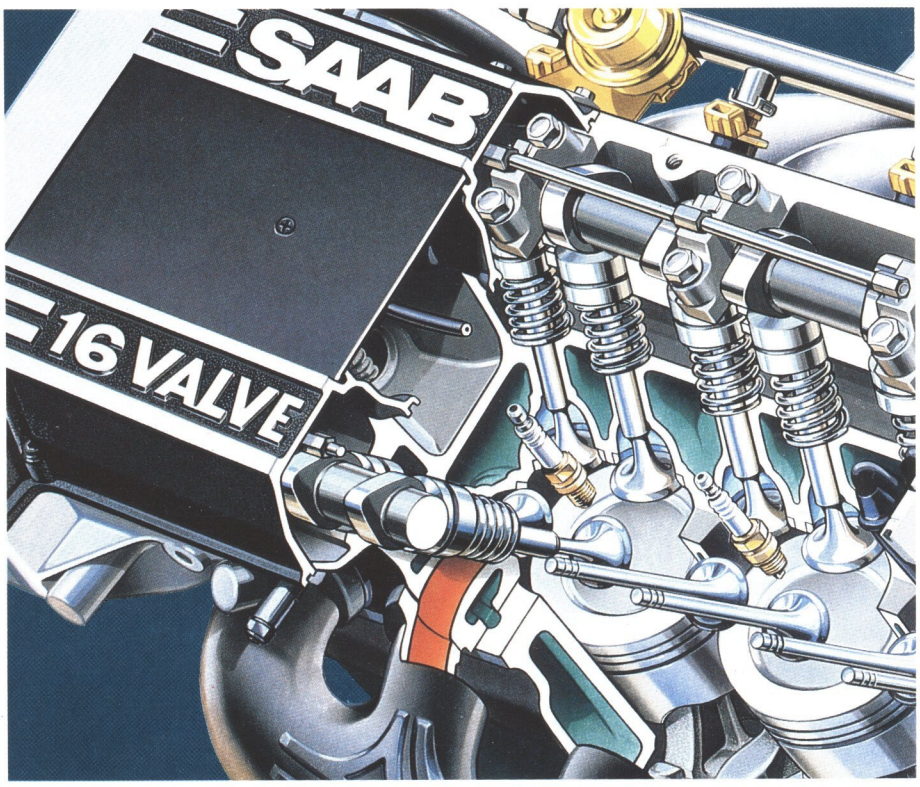
Most car manufacturers are developing engines with four valves per cylinder, and this design will probably dominate in the future. But Saab has already accumulated several years of experience in the production of such engines, for economical everyday motoring.

Ideal combustion chamber

The design of the combustion chamber is extremely favorable—it is dome-shaped, with a relatively flat piston crown—which contributes to high efficiency, low knocking tendencies and uniform combustion. The intake manifold is shaped to improve the turbulence in the combustion chamber, and Saab has filed patent applications for this design. Each of the two pairs of valves has a large flow area, and the engine can thus breath efficiently. Since the engine has four valves per cylinder instead of two, the individual valves are subjected to far less demanding working conditions. The thermal stresses, for instance, are appreciably lower at a given engine rating than those of an engine with only one intake and one exhaust valve per cylinder.

The four valve arrangement enables the spark plug to be located in the center of the combustion chamber. Its flame spreads uniformly throughout the combustion chamber. Engine designers describe this as a short and uniform flame path.

In an engine with two valves per cylinder and the spark plug located on one side of the combustion chamber, the flame path is long and asymmetrical. If the temperature at



An engine with four valves per cylinder makes it possible to achieve more effective combustion of the fuel/air mixture than in conventional engines. This in turn gives lower fuel consumption and increased power.

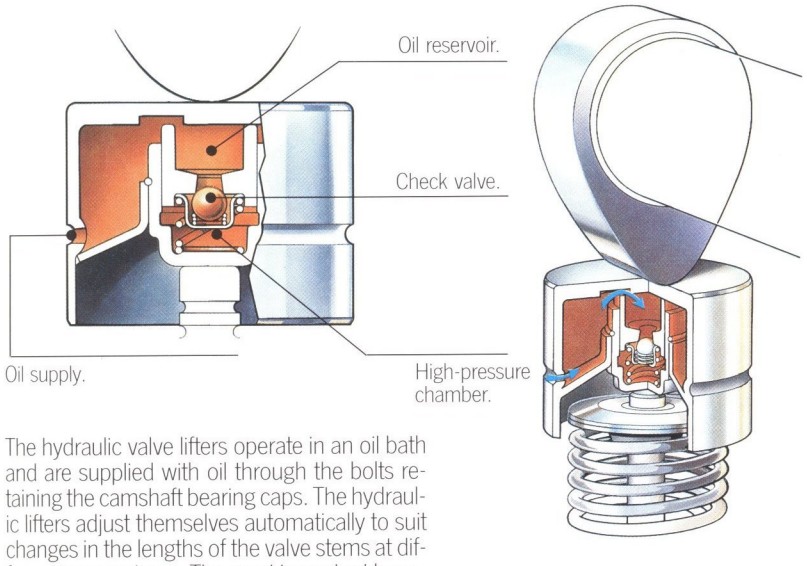
the far end of the combustion chamber is high, the fuel/air mixture may pre-ignite before the flame has reached it, and the engine will "knock". To avoid such harmful knocking, the compression ratio in this type of engine must be fairly low.

If the engine has four valves per cylinder and the spark plug is located centrally, the compression ratio can be raised without the risk of pre-ignition and knocking. A high compression ratio increases the engine efficiency, enables the engine to use the energy in the fuel more effectively, and raises the engine power and low speed response, although at a low fuel consumption. The Saab APC system plays an important role in this respect on the turbocharged engine. Using a knock sensor and an electronic control unit, the system continuously monitors the engine load. On the naturally-aspirated 16 valve engine, the knock sensor is integrated into the control of the ignition system. Due to the knock sensor systems, the engines can be run on any grade of fuel between 87 and 93 octane.*

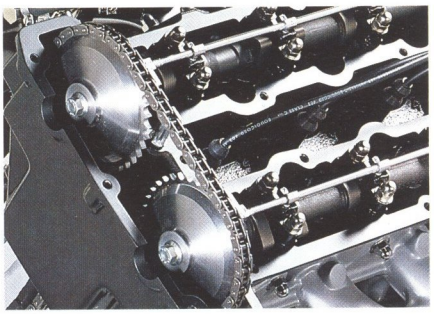
Self-adjusting hydraulic lifters

Since the hydraulic lifters of the Saab 16 valve engine are self-adjusting, periodic adjustment of the valve clearances is not necessary. This simplifies service work and reduces service costs. Since the valve clearances are always correct, engine wear will be reduced. The valve noise will also be lower, and the engine will run silently and smoothly. Patent applications have been filed for certain parts of the hydraulic lifters.

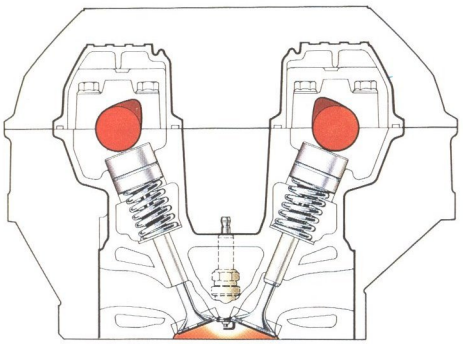
*) The Saab Turbo SPG requires premium unleaded fuel (91–93 AON).



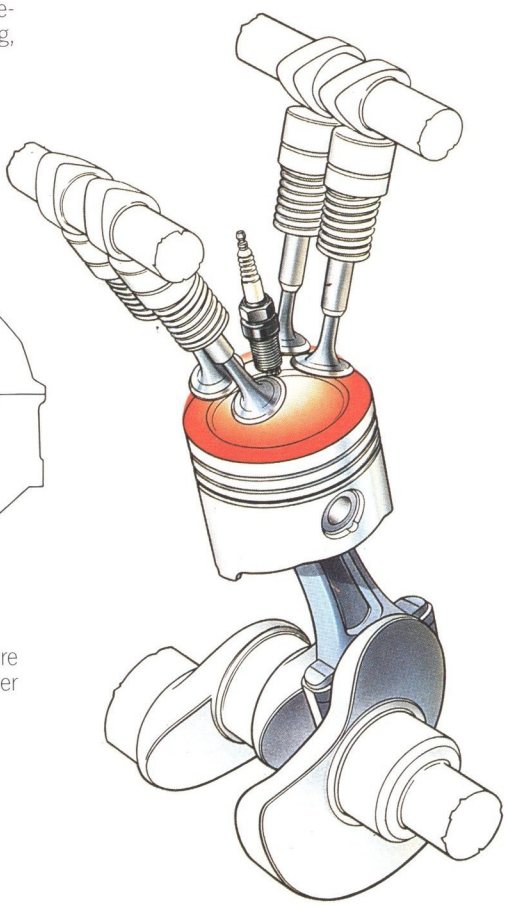
The hydraulic valve lifters operate in an oil bath and are supplied with oil through the bolts retaining the camshaft bearing caps. The hydraulic lifters adjust themselves automatically to suit changes in the lengths of the valve stems at different temperatures. The most important benefits are very silent and precise engine running, high reliability and long life.

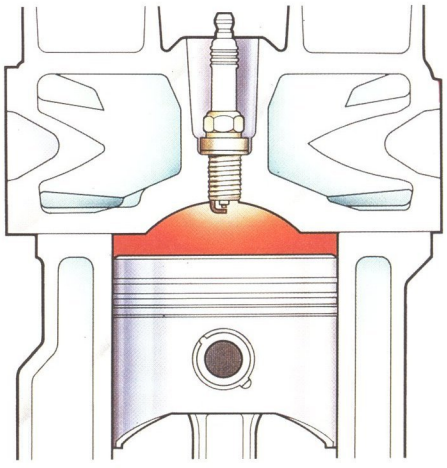


The camshafts are chain-driven, and the drive incorporates an automatic hydraulic chain tensioner. This design is silent and minimizes the service requirements.



Due to the small diameters, the valves are more upright than in engines with only two valves per cylinder.





The combustion chambers of the Saab 16 valve engines are dome-shaped. The spark plugs are located centrally between the four almost upright valves per cylinder. The bottom of each combustion chamber consists of a piston crown, which is almost completely flat.

Saab-Scania had accumulated a wealth of experience in the turbocharging of truck and bus engines when the turbocharged car engine for everyday motoring was launched in 1977.

Turbocharging

Saab was one of the world's first car manufacturers to adapt the turbocharging technique to everyday motoring. In a Saab Turbo, the boost in performance starts at low engine speeds. The engine delivers its peak torque at a mere 3000 rpm. This provides massive power resources for overtaking, without the need for down shifting. The engine is designed for normal, everyday motoring, instead of the extremely high top speeds demanded by a competition driver.

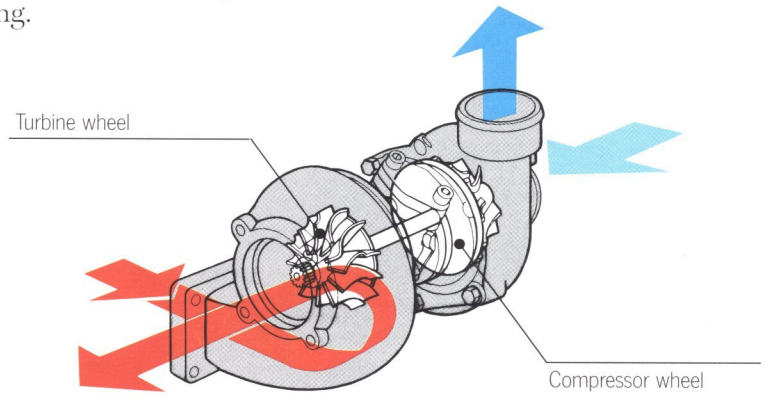
The performance of the turbocharged four cylinder Saab engine can match that of many six cylinder or eight cylinder engines. But experience has shown that the full power resources of an engine remain unused during 80–85 per cent of the motoring time, and the turbocharger is then "idling", without affecting the engine output. During this time, the Turbo engine has the good fuel economy of the naturally-aspirated, four cylinder fuel injection engine.

The turbocharger consists of a turbine and a compressor. The exhaust gases flow through the turbine, while the compressor boosts the engine intake air. In brief, the system operates as follows: The engine exhaust gases flow through the turbine casing, in which a bladed wheel is induced to rotate at very high speed—up to 120,000 revolutions per minute. The turbine wheel drives the compressor impeller directly on a common shaft.

When the turbocharger has reached a certain speed, the compressor will start to boost the intake air pressure. Due to this pressure increase, more air will be forced into the cylinders, and more fuel can thus be injected and burned. The engine delivers more energy per piston stroke, and the torque and power of the engine will therefore increase. The turbine is equipped with a waste gate—a pressure control valve which automatically bleeds off any excess pressure should it develop.

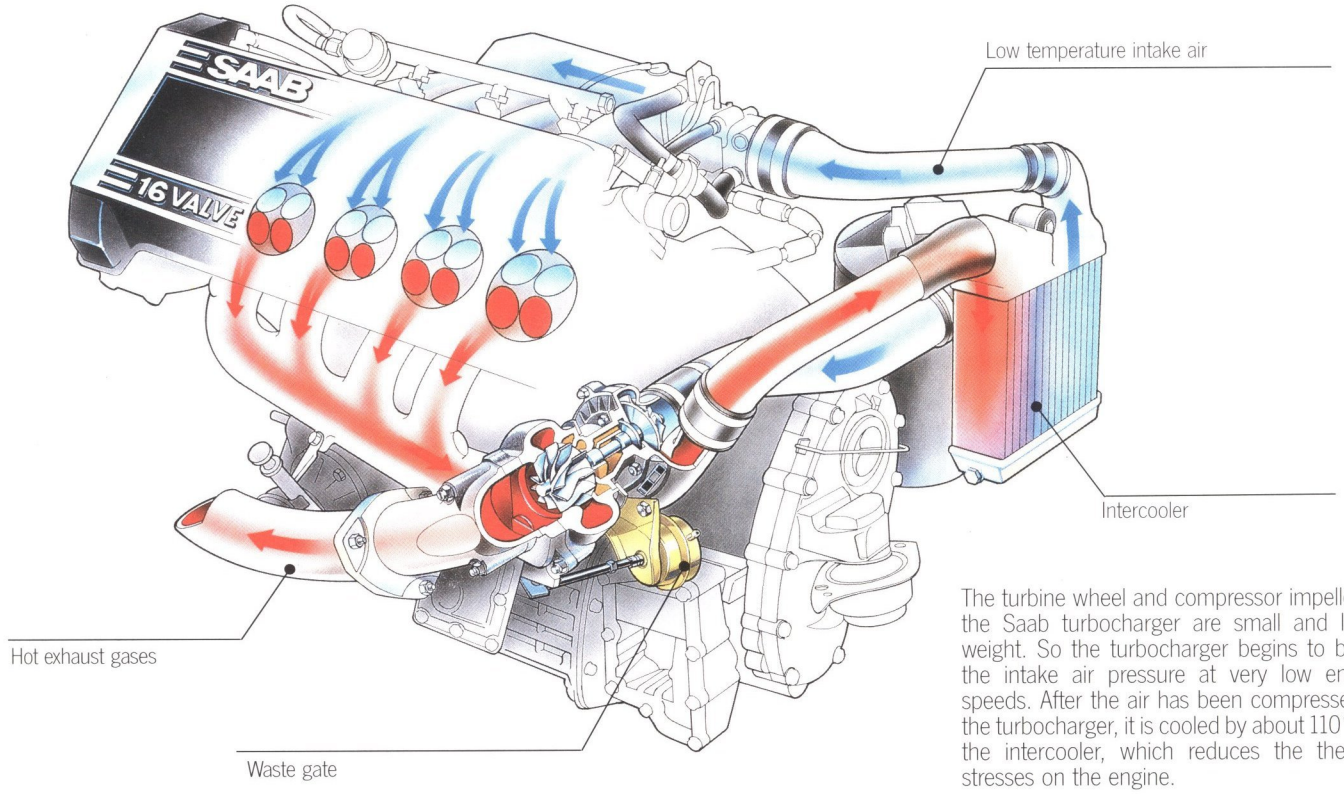
If the boost pressure should exceed the predetermined value in spite of the waste gate, a pressure switch will temporarily interrupt the fuel supply. The boost pressure can be monitored on a pressure gauge in the instrument panel. The system also includes an engine overspeed protection switch which will open the ignition circuit should the engine speed exceed 6000 rpm, and will close it again when the engine speed has fallen to an acceptable level. So the engine is monitored by two safety switches that prevent overloading.

The exhaust gases from the turbocharged engine are at roughly the same temperature as those leaving a conventional fuel injection engine, but the gas flow is higher. The components of the turbo engine, which are exposed to high temperatures, are protected, modified or upgraded to withstand the higher engine power with a comfortable margin. The engine oil cooler and water-cooled bearings housing on the turbocharger ensure that the engine oil temperature maintains a steady temperature even after hard driving. Moreover, the engine is equipped with an intercooler which cools the engine intake air by about 110°F. The turbocharged engine is also equipped with a radiator with a larger number of cooling passages and a radiator fan with a higher rating than that of the conventional



The turbocharger consists of two wheels mounted on a common rotating shaft. One of the wheels—the turbine—is driven by the exhaust gases. The other wheel—the compressor—is located in the intake system of the engine and its function is to compress the intake air. When the driver presses down the accelerator pedal, the flow of exhaust gases and their velocity will increase, and the wheels will therefore rotate at increasing speed. At a certain speed, the compressor will start boosting the pressure in the intake system, so that the engine will be supplied with more air than it would if it were naturally aspirated. A regulator ensures that the correct air pressure is maintained.

The Turbo engine delivers extra power at low engine speeds, for fast, safe overtaking, even in high gear. But during normal motoring, it is as economical on fuel as the injection engine.



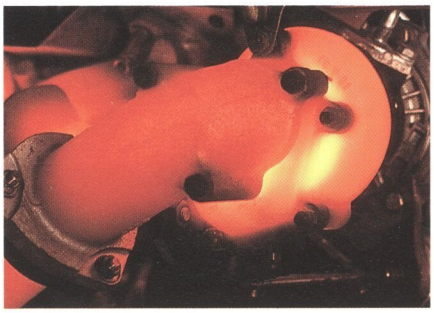
The turbine wheel and compressor impeller of the Saab turbocharger are small and lightweight. So the turbocharger begins to boost the intake air pressure at very low engine speeds. After the air has been compressed in the turbocharger, it is cooled by about 110°F in the intercooler, which reduces the thermal stresses on the engine.

fuel injection engine. Whenever necessary, the fan runs on after the ignition has been switched off.

Intercooler

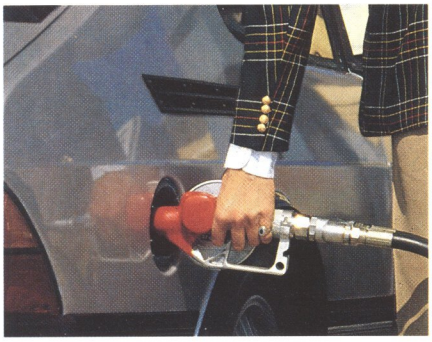
When the engine intake air has been compressed in the turbocharger, its temperature will rise. But the air is then routed through an intercooler between the turbocharger and the engine, and its temperature is reduced. As a result, its density increases, and the air admitted into the engine contains more oxygen. This enables more fuel to be injected and burned efficiently, and the engine power thus increases.

The intercooler has been developed by Saab and is designed to perform efficiently, even at very low temperatures. An intercooler may become blocked by ice in very cold and humid weather, and it will then perform unsatisfactorily. In the Saab intercooler, this is prevented by a safety valve which by-passes the intake air across the intercooler in the event of icing.

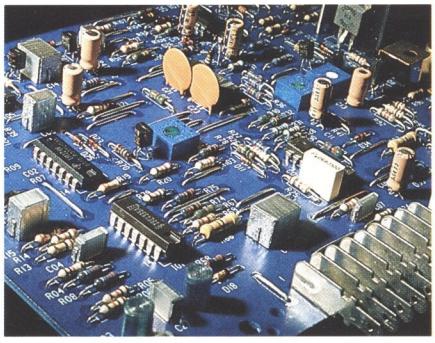


The turbine wheel is induced to rotate at up to 120,000 revolutions per minute. Under heavy loads the turbocharger can glow with the effect of heat and pressure from the exhaust gases passing through it.

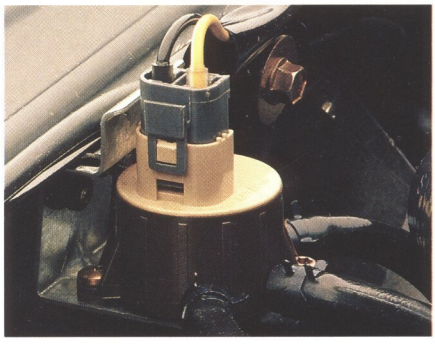
The small, minutely balanced turbine wheel is made from specially developed lightweight materials that can take the extreme temperatures generated.



Due to the APC system developed by Saab, the turbo engine can extract a maximum amount of energy from any grade of fuel. The APC system also protects the engine against harmful knocking at unsuitable engine loads or a low octane rating of the fuel.



The electronically controlled APC system protects the engine against harmful knocking and ensures optimum utilization of any grade of fuel between 87 and 93 AON.*



The solenoid valve regulates the control pressure to determine the charging pressure.

Saab Turbo with APC

Margins must be incorporated in the design of an internal combustion engine to allow for manufacturing tolerances, changes in the condition of the engine and varying climatic conditions. As a result, the energy content of the fuel cannot be utilized fully.

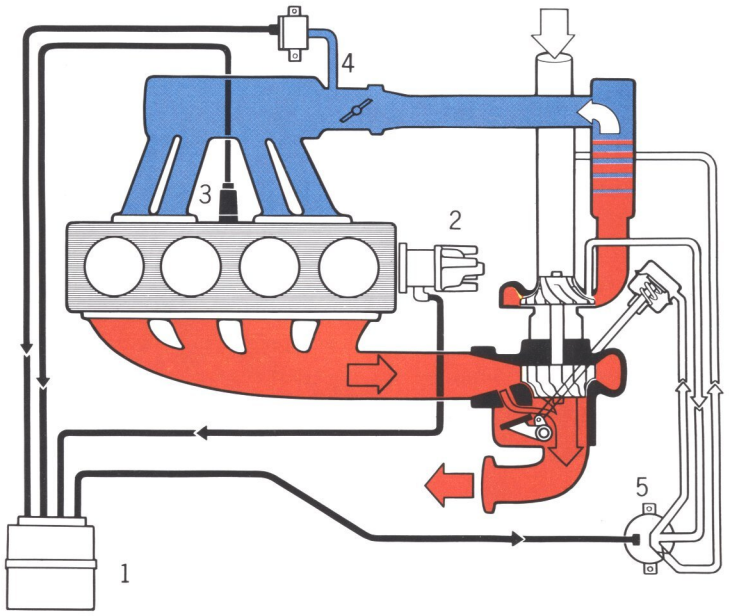
The Automatic Performance Control (APC) system is designed to ensure optimum utilization of the energy in the fuel at all engine speeds. The boost pressure delivered by the turbocharger is continually adjusted to suit the knocking limit of the fuel/air mixture in the cylinders, and fuel of varying octane ratings can therefore be used.

The Saab Turbo engine with APC can be run on fuel of any grade between 87 and 93 octane AON.*

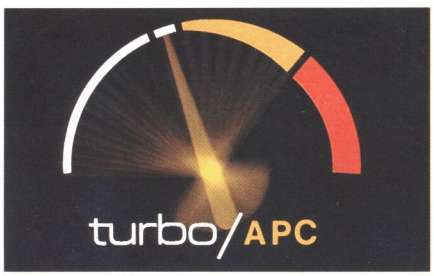
The engine adjusts itself automatically to the fuel used, but the higher the octane rating, the higher the engine output.

An advantage of the APC system is that inexpensive, low-octane fuel can be used whenever peak performance is not required. In addition APC allows for high basic compression ratio (9.0:1) for improved full economy under normal operating conditions.

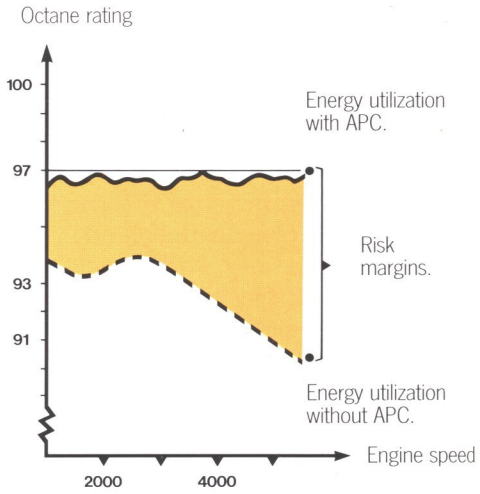
*) The Saab Turbo SPG requires premium unleaded fuel (91–93 AON).



The brain of the system is an electronic control unit (1). This receives signals from three sources—from the ignition distributor (2), a knock sensor (3) on the engine block, and a pressure sensor (4) in the intake manifold. As soon as the electronic control unit detects knocking, it will apply a signal across the solenoid valve (5) to the turbocharger to reduce the boost air pressure.



The thrilling surge of power you feel when the turbo creates boost is a much more telling signal than the smooth sweep of the needle into the yellow field of the boost pressure gauge.



A conventional engine must incorporate risk margins for engine tolerances, various climatic conditions and variations in the grade of fuel. An engine equipped with the APC system adjusts itself automatically to suit the operating conditions. The energy utilization will be maximized at all engine speeds.

Fuel injection enables the fuel/air ratio to be controlled very accurately, which contributes towards high power, low fuel consumption, smooth running and low exhaust gas emissions under a wide variety of motoring conditions.

Fuel injection

Saab uses two different types of injection systems on their fuel injected engines. The 900 series engines with 8 valves per cylinder use a mechanical system, while the 16 valve engines have an electronic injection system.

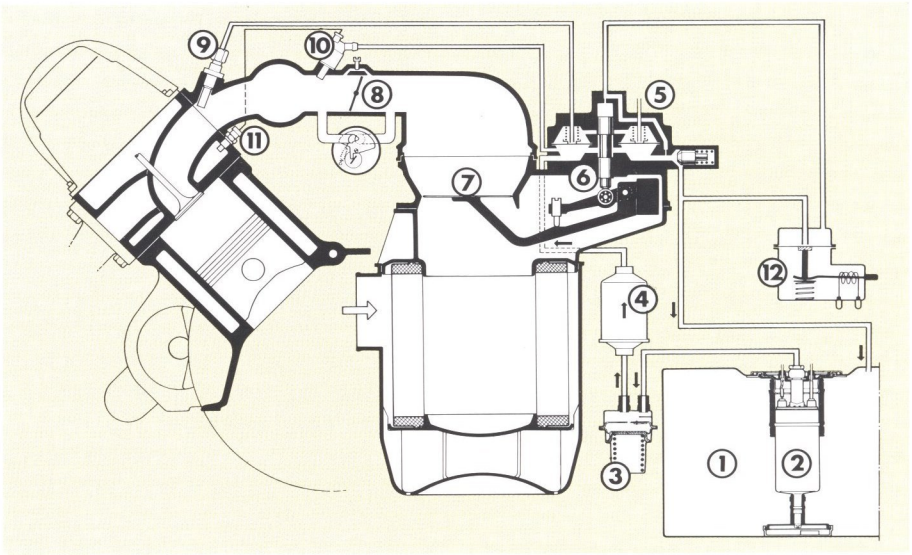
Mechanical fuel injection system

Fuel is pumped to the fuel distributor which is the brain of the Bosch Continuous Injection (CI) mechanical fuel injection system. The distributor senses the amount of air being drawn into the engine and then distributes proportional quantities of fuel to the injection valves.

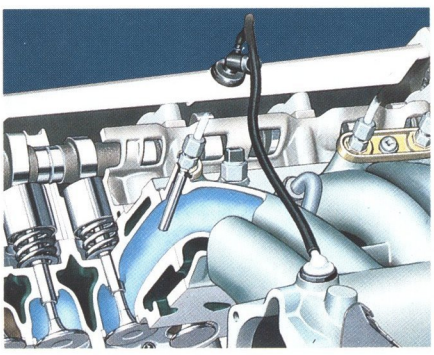
Inside the fuel distributor is a control piston (6), the position of which is regulated by the arm supporting the measuring disc (7) in the air intake.

The measuring disc moves up and down and adopts a position that is determined by the speed of the engine and the position of the air damper (8). The greater the flow of air, the higher the measuring disc and thus the control piston will be lifted.

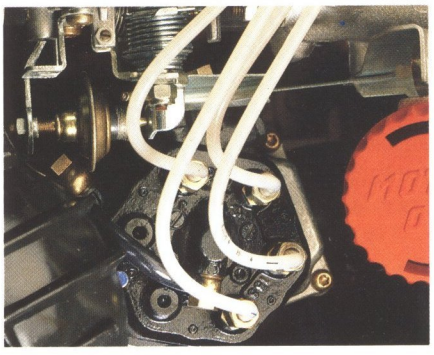
The control piston has four vertical slots, one for each engine cylinder. As the control piston is lifted, the slots are gradually exposed, allowing a greater quantity of fuel to flow to the springloaded injection valves—one for each cylinder. The fuel is injected continuously, once the fuel pressure is high enough. When the engine stops, the pressure in the system falls and the valve closes again.



1. Fuel tank
2. Fuel pump
3. Pressure accumulator
4. Fuel filter
5. Fuel distributor
6. Control piston
7. Measuring disc
8. Throttle plate
9. Injection valve
10. Cold-staring valve
11. Thermostatic switch
12. Pressure control regulator

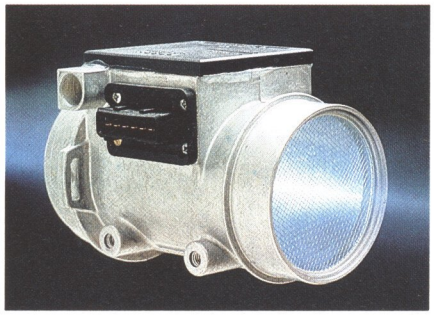


The injection valves are mounted in the inlet manifold at the cylinder head and continuously inject fuel to suit engine running conditions.

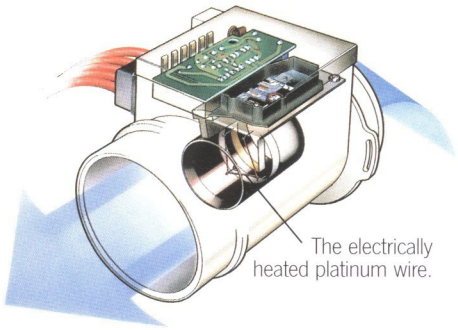


The fuel injection system senses the amount of air being drawn into the engine and ensures that the correct quantity of fuel will be injected into the engine.

The engine starts easily and runs smoothly immediately, regardless of the outdoor temperature.



The fuel injection system measures the mass of air flowing into the engine. An electronic control unit then determines accurately the fuel needed to produce the correct fuel/air mixture.



The mass air flow meter consists of a tube in which a platinum wire is maintained at a constant temperature and measures the mass air flow through the tube. It has no moving parts that could sustain wear.

Electronic fuel injection system

The 16 valve engines are equipped with the Bosch LH electronic fuel injection system. The system includes an air flow meter which measures the mass flow instead of the volume flow, so that the fuel can be metered more accurately in relation to the oxygen content of the air.

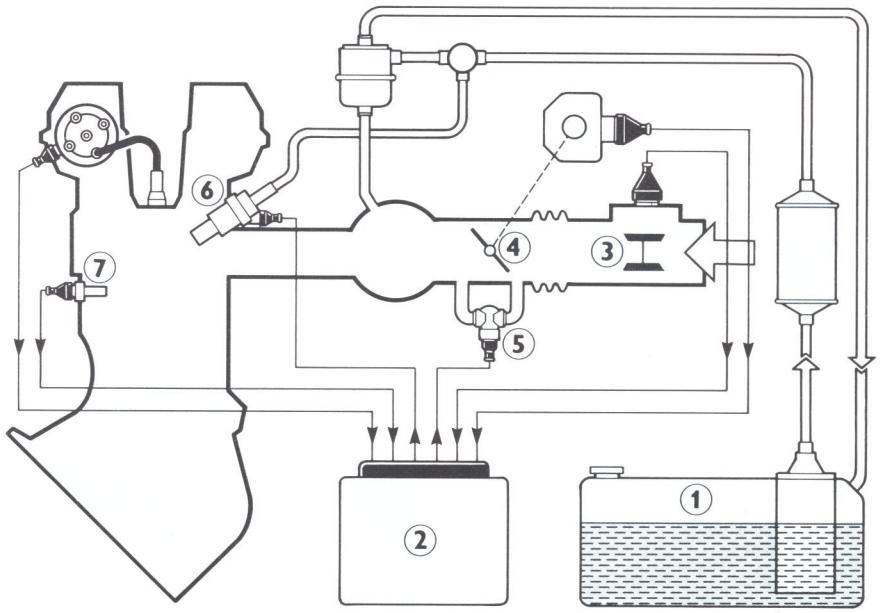
The engine is therefore less sensitive to variations in the ambient temperature and atmospheric pressure. The engine power is unaffected when the car is travelling at high altitudes. This fuel injection system makes the engine easier to start—whether hot or cold.

The operation of the air mass meter is as follows. Incoming air flows across an electrically heated platinum wire in a tubular air meter. A microprocessor measures the electrical energy necessary to maintain the wire at a constant temperature, which is a measure of the mass of air flowing across the wire. At the same time, the microprocessor senses the engine speed and temperature, which enables it to meter the correct quantity of fuel to suit the requirements of the engine at all times. Moreover, the microprocessor incorporates a speed limiter which ensures that no opening signals will be transmitted to the fuel injection valves at engine speeds above 6000 rpm.

The LH system is self-cleaning, since the platinum wire is quickly heated to about 1800°F (1000°C) every time the ignition is switched off. This burns off any deposits on the wire.

Automatic idling control

The Saab 16 valve engine is also equipped with a system which maintains a constant idling speed, regardless of the engine load. The automatic idling control system employs an electronically controlled valve, which ensures that the engine speed will remain constant, regardless of any additional load applied by the air conditioner, automatic transmission, electric defroster for the rear window, etc. This system contributes to the high standard of comfort and is of particular benefit to the driver. It ensures constant idle at high altitude areas and aids improved fuel economy.



The intake manifold is equipped with one injection valve for every cylinder. The injection valve is fitted upstream of the corresponding intake valve and is controlled electro-magnetically by signals from the electronic control unit. The electronic control unit calculates the opening time for the injection valve to suit the engine running conditions, so that the quantity of fuel injected will be correct in relation to the quantity of air flowing to the engine.

1. Fuel tank.
2. Electronic control unit.
3. Air mass meter.
4. Throttle valve.
5. Automatic idling control.
6. Injection valve.
7. Temperature transmitter (N.T.C).

Although a relatively small car manufacturer, Saab has always been among the forerunners in meeting the stiffening exhaust emission requirements.

Exhaust gas emission control

Saab cars are equipped with three-way catalytic converters which remove unburned hydrocarbons, carbon monoxide and nitrous oxide from the exhaust gases. The active part of the catalytic converter consists of two ceramic cores with small square holes, coated with a thin film of precious metals. The catalyst converts most of the toxic substances to more innocuous gases, i.e. carbon dioxide, steam and nitrogen.

To ensure the best possible performance of the catalyst, the fuel/air ratio supplied to the engine must be carefully controlled. The fuel injection system is therefore controlled by signals from a Lambda sensor which senses the oxygen content in the exhaust gases. A car equipped with catalytic converter and the Lambda system must be run on lead-free gasoline, and is therefore equipped with a special fuel filler pipe, so that it cannot be filled with leaded fuel by mistake.

All Saab 900 cars are also equipped with a breakerless ignition system. Since this system has no breaker points, etc., that can sustain wear, it will perform efficiently for a very long time—with no service requirements. This ensures better running economy, consistently high performance and cleaner exhaust gases.

All cars are also equipped with an evaporative loss control system, which minimizes the evaporative emission of hydrocarbons from the fuel system of the car.

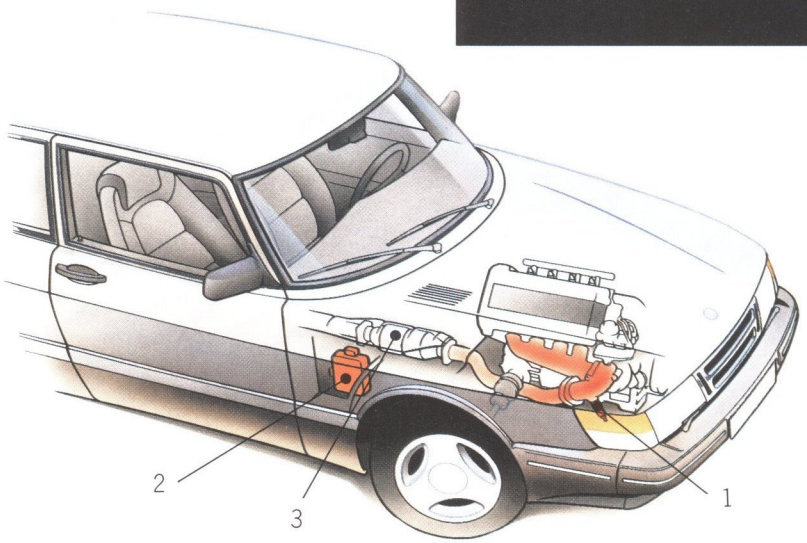
Lambda control of the fuel injection system is essential for satisfactory performance of the catalytic converter, so that carbon monoxide, unburned hydrocarbons and nitrous oxides will be reduced.

1. The Lambda sensor monitors very accurately the oxygen content of the exhaust gases and applies electrical signals to the electronic control unit of the fuel injection system.

2. The electronic control unit regulates the fuel/air ratio, so that it is as close as possible to the ideal Lambda value of 1.

3. The catalytic converter is mounted in the exhaust system, under the floor below the center console. The catalyst is heated by the exhaust gases and operates at temperatures between about 600 and 1500°F. A heat shield between the converter and the floor reduces radiated heat from the converter into the interior.

The Lambda sensor mounted in the exhaust pipe reacts very quickly to changes in the oxygen content of the exhaust gases and applies electrical signals to the electronic control unit of the system.



The drive gear ratios of the power train between the engine and the driving wheels must be carefully selected for optimum balance between often conflicting requirements, in order to achieve the best possible drivability.

Transmission

The Saab 900 has front wheel drive. The gearbox, final drive and differential are located below the engine and are integrated with it—a design that has resulted in a very compact power unit.

Manual gearbox

The sturdy manual gearbox has 5 forward speeds.

The gearbox, final drive and differential form an integrated unit, with its own lubrication system. The drive shafts have double universal joints, the outer ones being of Rzeppa type, to provide smooth steering and a positive steering wheel "feel", even when the car is cornering hard. All universal joints are permanently lubricated.

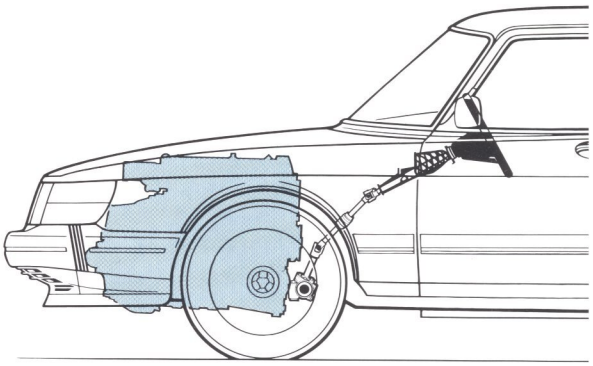
The primary chain drive is silent and reliable. Since the clutch is fitted at the front of the engine, it is adequately cooled and has a long useful life. It is also easier to service.

Automatic transmission

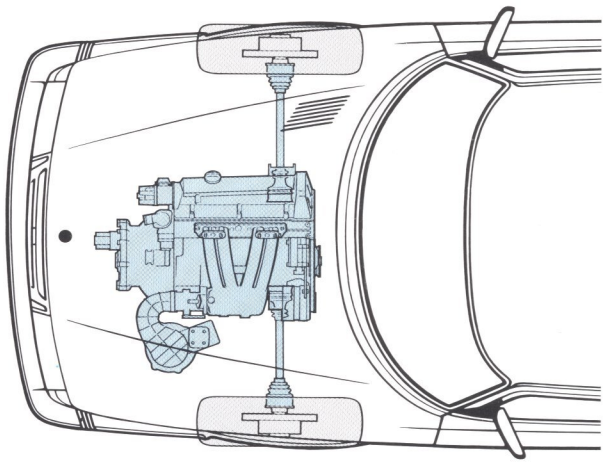
The automatic transmission, which is specially matched to the 900-models, is manufactured by Borg-Warner and is integrated with the engine. Power is transmitted through a torque converter and chain drive to the gearbox and differential. The control valve system is incorporated into the front of the gearbox, where it is readily accessible from below. The gearbox has three forward ratios and one reverse.

Power is transmitted smoothly and uniformly to the driving wheels. Due to the torque converter, the car accelerates briskly even from low speeds, without the transmission changing down. The Saab automatic transmission has wide overlap, to prevent continual changing up and down in city traffic.

When the accelerator pedal is pressed down hard, the automatic transmission will shift to a lower gear. This kick-down feature provides appreciably better acceleration whenever needed for overtaking. Cars with automatic transmission are equipped with a separate cooler for the transmission oil.



The engine, clutch, gearbox and differential are integrated into a compact unit.



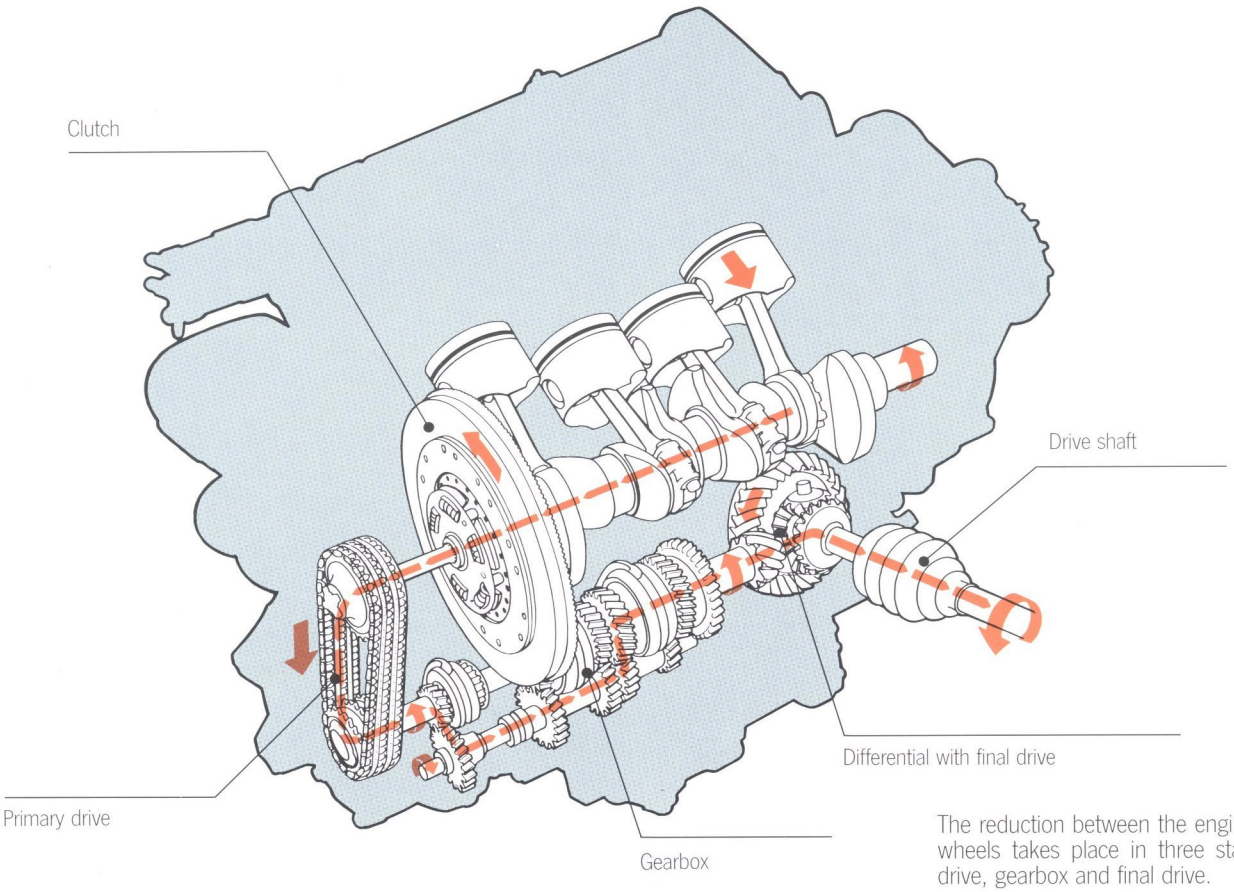
The drive train from the gearbox to the wheels includes two universal joints of constant-velocity type for virtually vibration-free power transmission, even at maximum deflection of the suspension springs, maximum steering travel of the wheels and full throttle.

If the ratios are too high, many motorists may adopt a driving technique that may increase the fuel consumption rather than reduce it. The ratios in Saab cars have been selected to strike the best possible balance between these factors.

Certain models can be supplied with automatic transmission.

The five speed manual gearbox is standard.

Saab engines develop a high torque, even at low speeds. So gear-changing can be reduced to a minimum.



The reduction between the engine and driven wheels takes place in three stages: primary drive, gearbox and final drive.

Performance

The cylinder head is of cross-flow design and supports the direct-acting, overhead camshaft:
- Robust and reliable.
- Excellent tractive power over a wide range of engine revs.

Mechanical fuel injection:
- Ensures much more efficient fuel consumption under varying running conditions.
- Excellent cold-starting properties.

Turbo with intercooler:
- Offers acceleration and top speed as a six-cylinder or eight-cylinder engine of similar displacement.
- Favorable working temperature—for better resistance to wear and longer useful life.
- High reliability.

Double overhead camshafts, four valves per cylinder and dome-shaped combustion chambers:
- High power.
- Low fuel consumption.

APC system and LH fuel injection:
- The engine can run on fuel of any octane rating (between 87 and 93 AON), without adjustment. (Turbo SPG 91–93 AON.)
- Reliable starting, from hot or cold.
- Maintains correct fuel/air ratio at all altitudes.
- Protects the engine against harmful knocking at unsuitable engine loads.

Hydraulic cam followers:
- Self-adjusting for improved accuracy.
- High reliability—silent operation.
- Minimum service requirements.

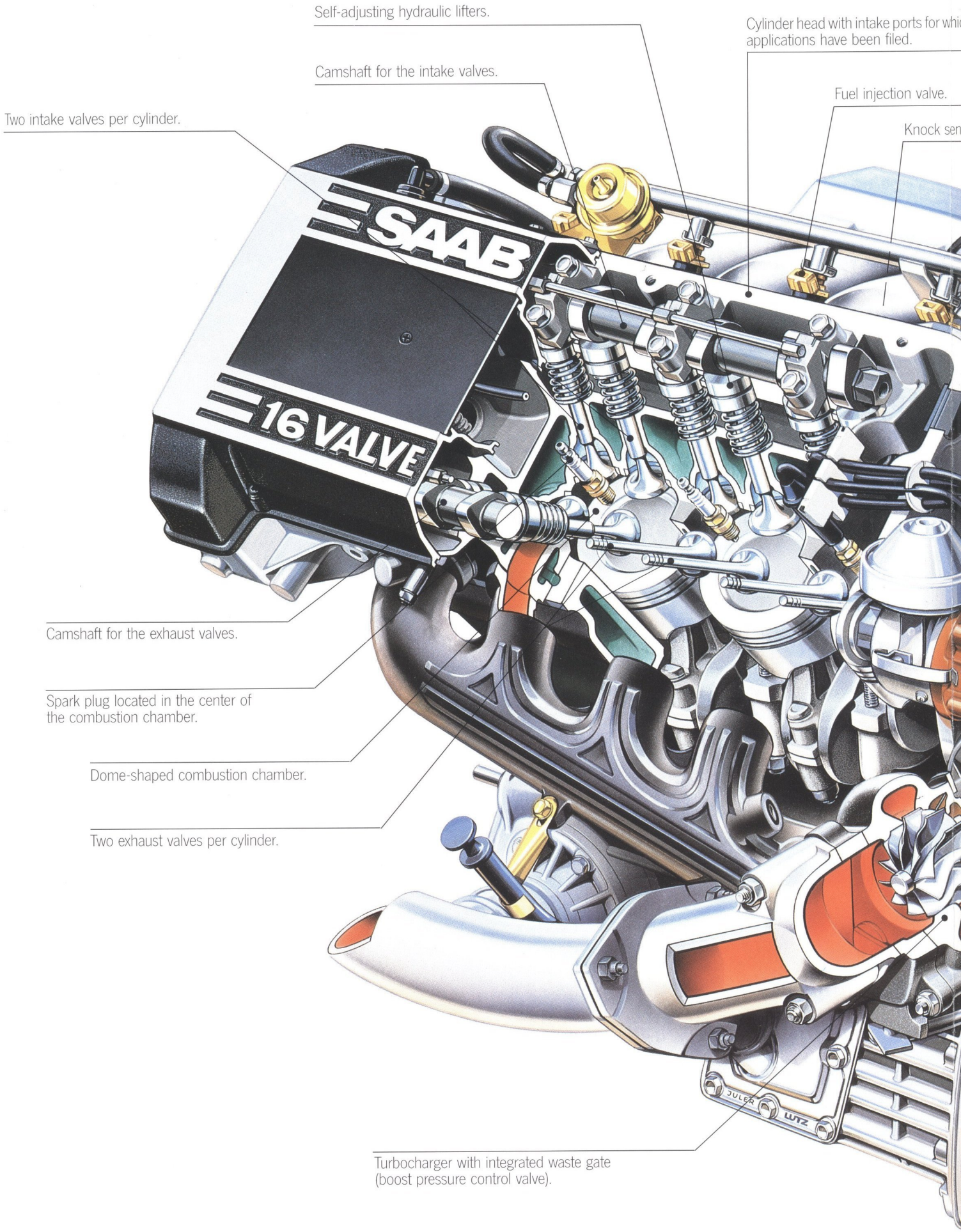
Gear-shift mechanism integrated with anti-theft lock:
- Very effective theft-proofing.
- Locks in reverse gear.

Gearboxes with optimized reduction ratios:
- Efficient combination of high performance, good fuel economy and high comfort.

Gearbox and differential integrated with the engine:
- Compact power unit—does not encroach on the interior space.
- Effective protection in a collision.

Clutch and primary drive at the front of the engine:
- Good cooling—long useful life.
- Good accessibility for simplified service.

The cutaway illustration on pages 27–28 shows the Saab 16 valve turbocharged engine.

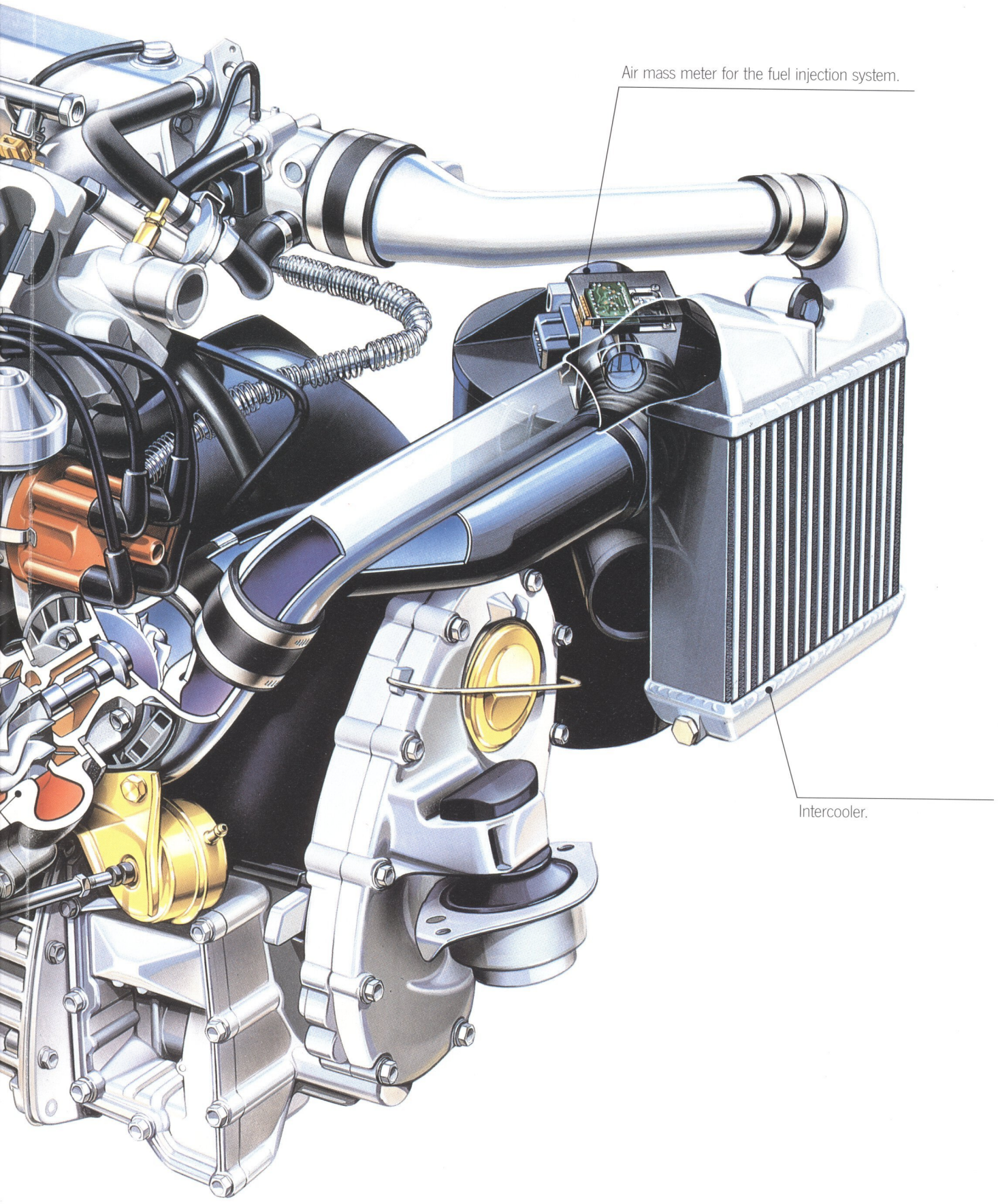

Self-adjusting hydraulic lifters.
Cylinder head with intake ports for whi
applications have been filed.
Camshaft for the intake valves.
Fuel injection valve.
Two intake valves per cylinder.
Knock sen
SAAB
16 VALVE
Camshaft for the exhaust valves.
Spark plug located in the center of
the combustion chamber.
Dome-shaped combustion chamber.
Two exhaust valves per cylinder.
Turbocharger with integrated waste gate
(boost pressure control valve).

s for which patent

valve.

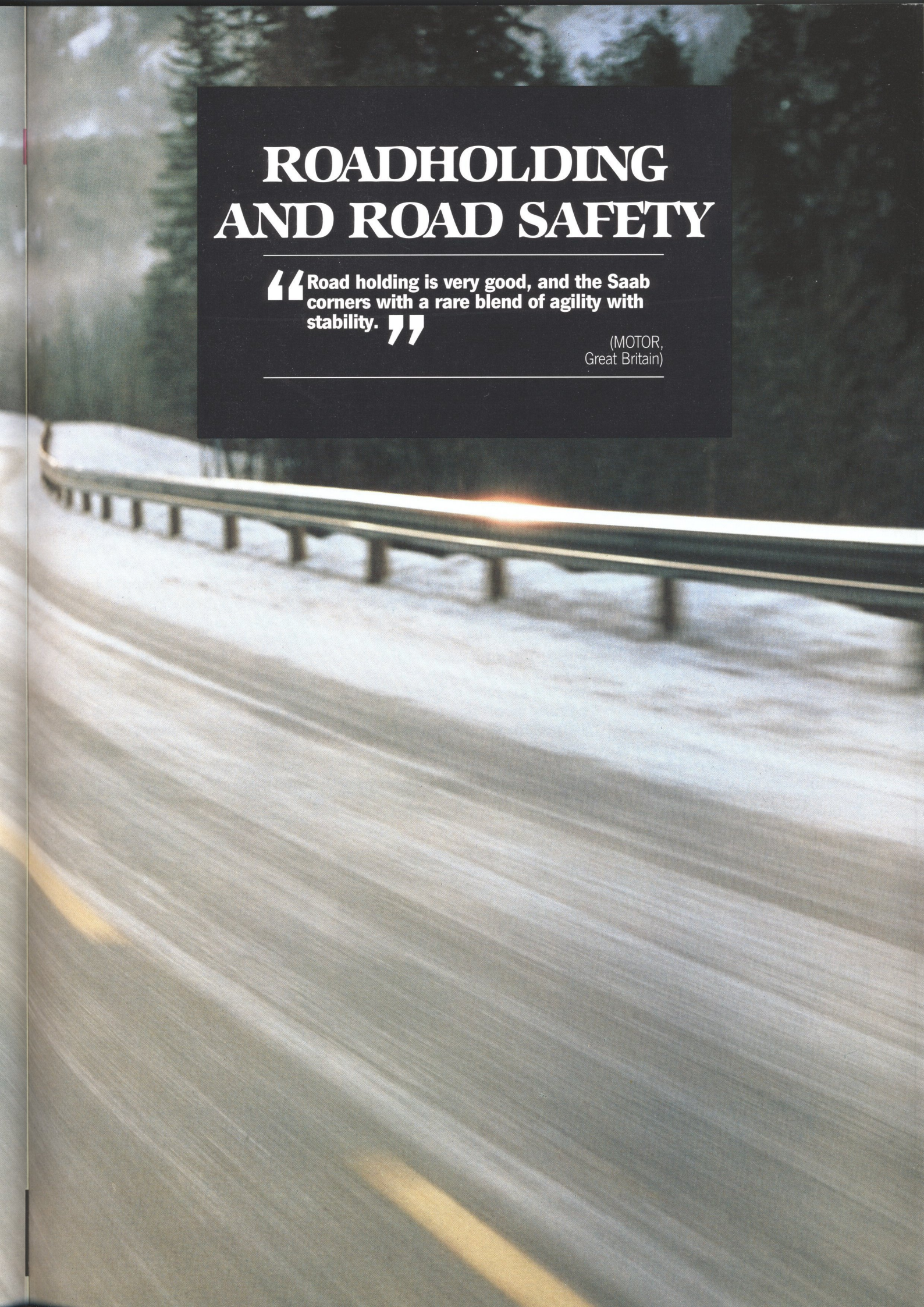
nock sensor for the APC system.

The 16 valve turbocharged engine




SAAB
900 turbo
CALIFORNIA
1NHW262


CALIFORNIA
1LGY590



ROADHOLDING AND ROAD SAFETY

"Road holding is very good, and the Saab corners with a rare blend of agility with stability."

(MOTOR,
Great Britain)

Good road behavior of a car is dependent on a host of interacting factors rather than merely one or two good design features.

Chassis philosophy

The Saab 900 has excellent directional stability, regardless of the road surface or the load. Since the driving and steering wheels carry most of the load, there is little risk of wheel spin, which is important when the road surface is slippery, snow-covered or otherwise difficult. Due to the design of the chassis, the Saab 900 has a "forgiving" nature—it will tolerate minor errors the driver may make.

When travelling at moderate speeds on good roads, all cars will perform in a disciplined, well-behaved manner. A car will only show its true mettle when the road conditions become more difficult. Front wheel drive, favorable weight distribution, good suspension characteristics, rack-and-pinion steering, and the geometry of the steering and chassis—these are the features that have been combined to make the Saab 900 so outstanding when the road and weather conditions are at their worst.

The ideal car

A car must be able to give the driver fast and accurate information in all situations. The human being is very sensitive in this respect and can immediately detect differences of one hundredth of a second.

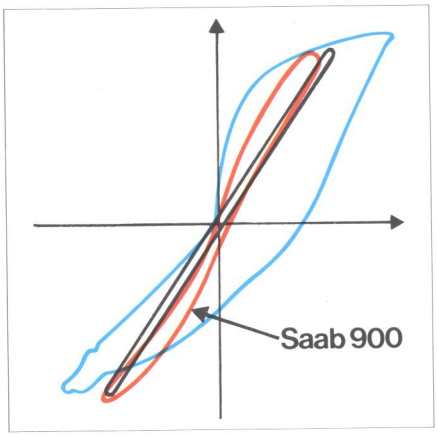
In theory, there should be no delay between the movement of the steering wheel, the car's response to the movement and the instant when the driver can actually feel the car responding. The way in which the response is felt should also be consistent and logical. The driver's hands, eyes and body should receive fast, clear and accurate information.

In technical terms, the reaction of the car to movements of the steering wheel can be described in terms of yaw rate and lateral acceleration. The yaw rate is detected through the eyes; lateral acceleration through the body.

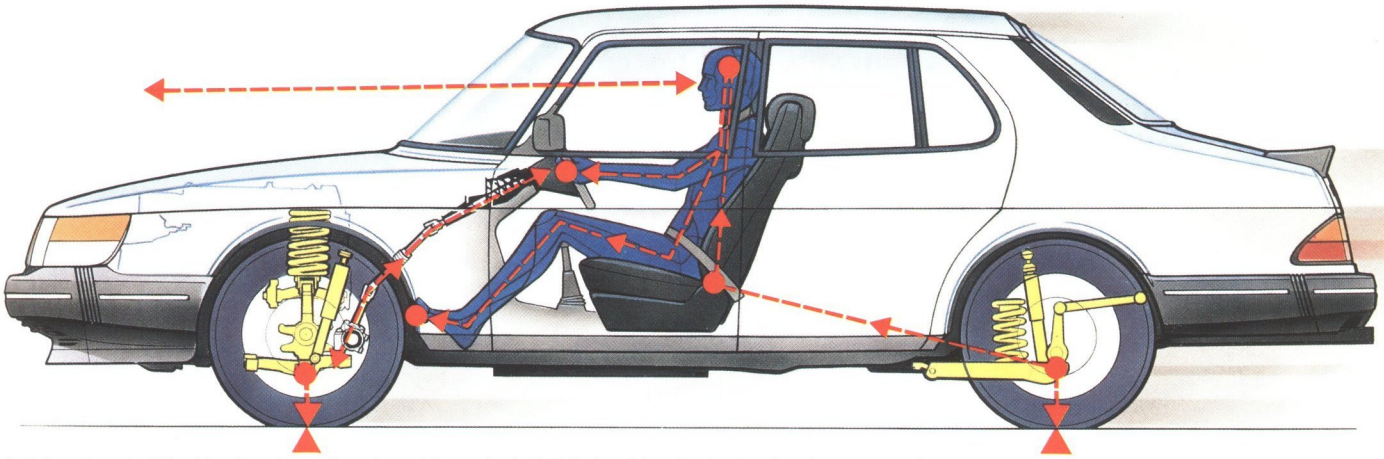
Interaction between the driver and the car

The driver receives very distinct, reliable signals at all times—through the steering wheel, the pedals and the seat. This is an important element that enables the taking of correct action in all situations. Moreover, the Saab 900 has a forgiving

The behavior of a car on the road is primarily dependent on the chassis design and the chassis geometry. The track, wheelbase, wheels, tires, suspension, springs and steering are elements that have been carefully matched to one another to provide Saab with its good roadholding and good directional stability—to the benefit of road safety and comfort.



If the yaw rate is plotted as a function of the lateral acceleration on a graph, the curve for the theoretical ideal car will be a very narrow ellipse (shown black in the graph above). The blue loop represents a competing car with front wheel drive and with acknowledged good roadholding properties.



An integral part of Saab's chassis engineering philosophy is that it should not only give the driver control over the car, but also act as a responsive medium, supplying constant feedback on the car's reactions.

nature and provides the driver with ample margins for correcting any minor errors, instead of amplifying them.

The interaction between the driver and the car can be illustrated by what happens when the driver turns the steering wheel. The movements of the car can then be described by the concepts of yaw and lateral acceleration. The yaw rate is a measure of how quickly the car changes course. This is recorded by the driver's eyes. The lateral acceleration is a measure of the forces acting transversely on the car, i.e. how it moves sideways. The driver detects this by the side pressure applied by the seat to his body. The seat, in turn, receives information from the tires, through the chassis and the car body.

If the car should skid, the yaw rate will increase and the driver will detect this visually. At the same time the lateral acceleration will decrease, since the tires no longer grip the road and no lateral forces will therefore act on the car body. The driver will detect this with his body.

The human being is extremely receptive to changes in both of these phenomena. The driver will react to even very small variations and will correct as necessary with the steering wheel. So it is vitally important for this information to be clear and correct.

In the Saab 900, all such "signal transmitters" are carefully matched in the various design features of the car, to provide the driver with correct information. The combination of optimum chassis geometry and exact interplay between the driver and the car has resulted in good roadholding and good road behavior.

The chassis is designed to provide optimum ride and driving comfort at all speeds. For optimum comfort, the chassis must attenuate vibrations of different frequencies and eliminate fatiguing swaying and pitching of the occupants' bodies. None of this is usually apparent on a short trip or a test drive. But after a longer journey in a car that does not conform to these comfort criteria, the passengers and driver will feel tired, stiff and uncomfortable. Much work has therefore been devoted on the Saab 900 to combine good roadholding characteristics with a high standard of driving and ride comfort.

This has been achieved by technical features such as the light, beam-type rear axle, soft springs, suitably matched shock absorbers, well-proportioned rubber bushings and a Panhard rod that effectively counteracts the rolling tendencies of the body. This design reduces the undesirable side movements and the fatiguing "swaying" motion, i.e. the tiring and unfortunately common sideways movement that causes the occupants' heads to sway from side to side. The beam-type rear axle also eliminates undesirable steering effects, and the soft bushings damp out the vibrations.

Computerized calculations and advanced measuring equipment designed by Saab-Scania have been used to optimize the chassis design. Conventional optical measuring equipment was not considered to be accurate enough to meet the high standards set by our designers.

A well designed chassis should be able to absorb most irregularities in the road surface, without the occupants noticing them. The chassis must also provide the driver with the best possible opportunities for driving the car safely at all times, regardless of the weather and road conditions.

Chassis

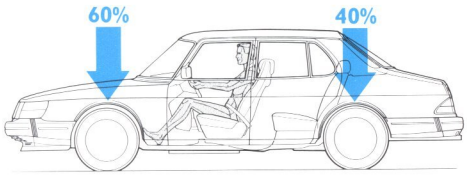
Front wheel drive is one of the factors that contributes to the good road behavior of the Saab 900. In a car with front wheel drive, the rear wheels assist in maintaining good directional stability, since they transmit no drive forces. On the Saab 900, the weight distribution and the design of the rear axle and brakes enable the rear wheels to absorb relatively high lateral forces, even while the car is braked. The Saab 900 normally has a certain amount of understeer and retains its characteristics even under extreme conditions. At curb weight, 61% of the weight of a Saab 900 is supported by the front wheels and 39% by the rear wheels. At full load, the corresponding weight distribution is 51/49. Under this condition, the Saab 900 still has a certain amount of understeer and behaves in a familiar and consistent manner.

Rear axle.

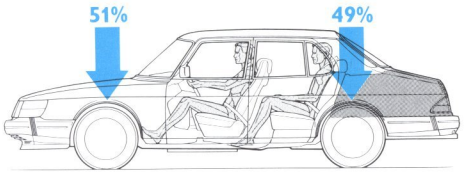
The rear axle is a lightweight tube located by five links that always keeps the rear wheels parallel. It causes none of the changes in camber that are an inherent weakness of independent rear suspension. On cornering, the lateral forces are absorbed by a Panhard rod. The arms on each side prevent the rear axle from rotating during braking, acceleration, etc. The stabilizer bars fitted to all 16 valve models improve further the already excellent high-speed behavior. All rear-axle mountings are rubber-bushed, to prevent the transmission of road noise to the body.

Front wheel suspension.

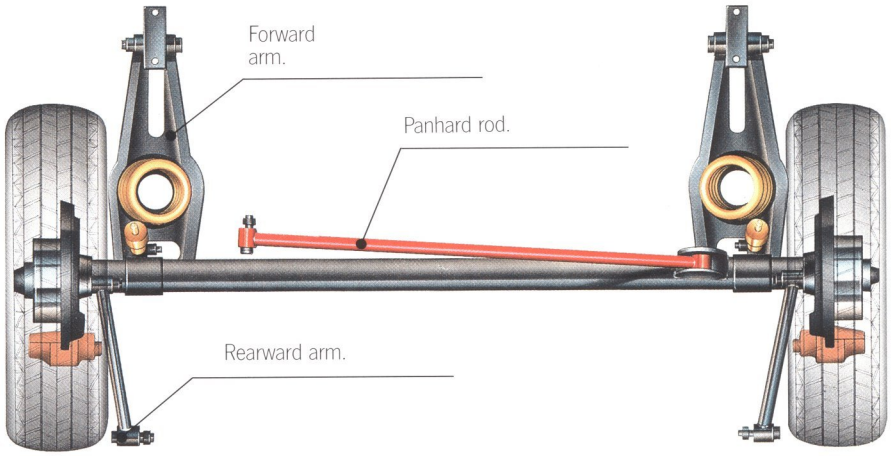
The front wheels are mounted in double wishbones which pivot in

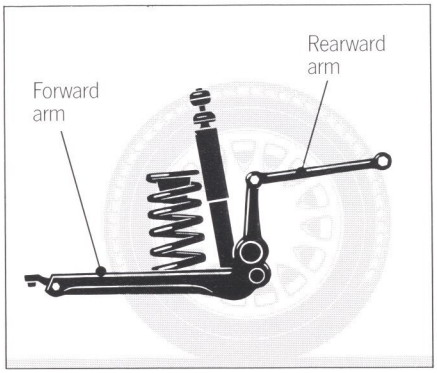


At curb weight, about 60% of the weight of a Saab 900 is supported by the front wheels and 40% by the rear wheels.



Even when the car is loaded to its maximum capacity, the majority of the weight will remain over the front wheels, ensuring predictable and familiar handling characteristics.



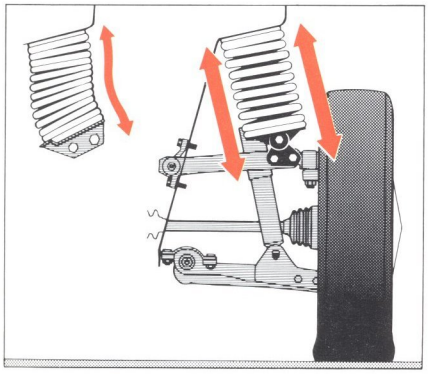


The Watt's link configuration on the rear suspension—a straight, beam-type rear axle with two leading and two trailing arms plus cross member—uses the arms to absorb longitudinal forces and braking torque. All movements caused by irregularities in the road surface are absorbed vertically. The Panhard rod braces the back axle laterally during hard cornering.

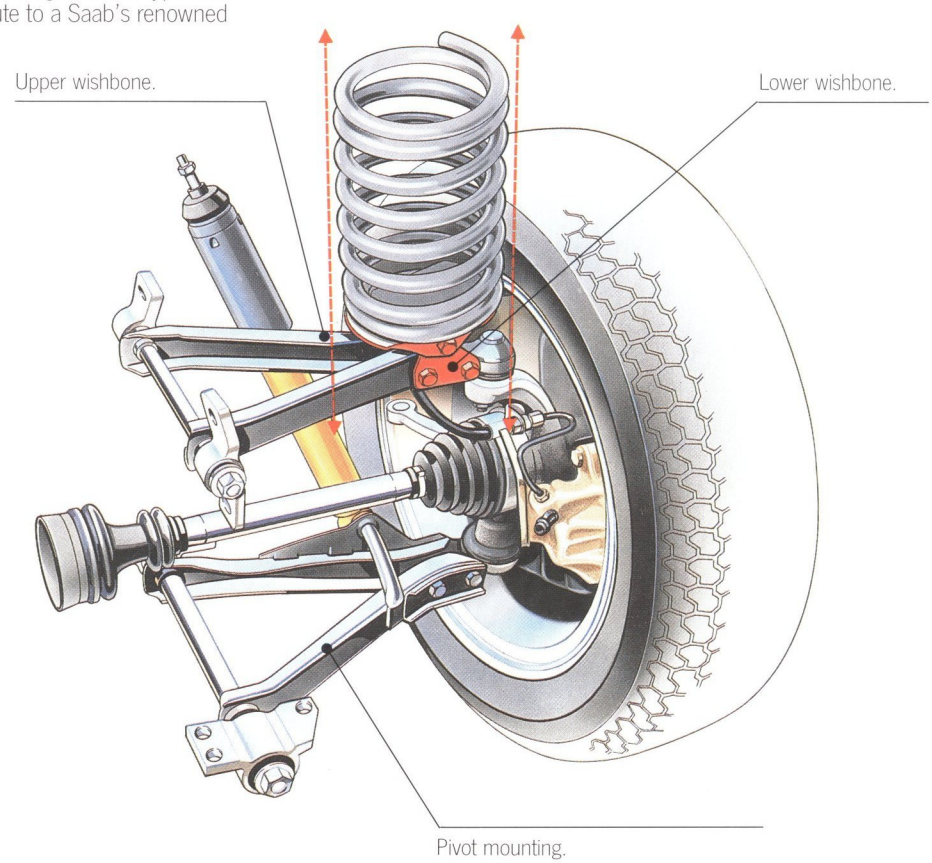
rubber bushings. The steering knuckle is mounted in permanently lubricated bearings. The suspension springs are pivot-mounted, which is an unusual refinement. Due to the pivot mounting, the springs will not deflect when heavily compressed, thus always providing optimum springing. This is beneficial to the road behavior and the occupant comfort, particularly on rough road surfaces. Moreover, pivot-mounted springs are more silent than conventionally mounted springs.

Saab chassis design contributes to driving confidence and predictable handling, regardless of road surface conditions.

Front-wheel drive, overall weight distribution and the light, beam-type rear axle are some of the design details which contribute to a Saab's renowned roadholding characteristics.



The front suspension coil springs are pivot-mounted, which is an unusual refinement. The pivot-mounting ensures that the springs will always be straight.



The front wheels are mounted in double wishbones with pivoted suspension springs and gas shock absorbers.

The brake system is one of the most vital safety features on a car. It must perform correctly in all situations, it must not fade when the brakes are applied repeatedly over a long period of time, and it must have the performance necessary for stopping the car quickly in an emergency situation.

Brakes

The Saab 900 has disc brakes all round. Different friction materials with different characteristics are used at the front and rear. This provides the shortest possible braking distance under varying conditions and ensures consistent behavior in different situations. When the brakes are applied lightly at a moderate speed or on a slippery surface, the braking effort distribution will be 70% at the front and 30% at the rear. When the brakes are applied hard on a dry surface, the front brakes will exert a relatively higher braking effort, and the front/rear distribution will then be 80/20%.

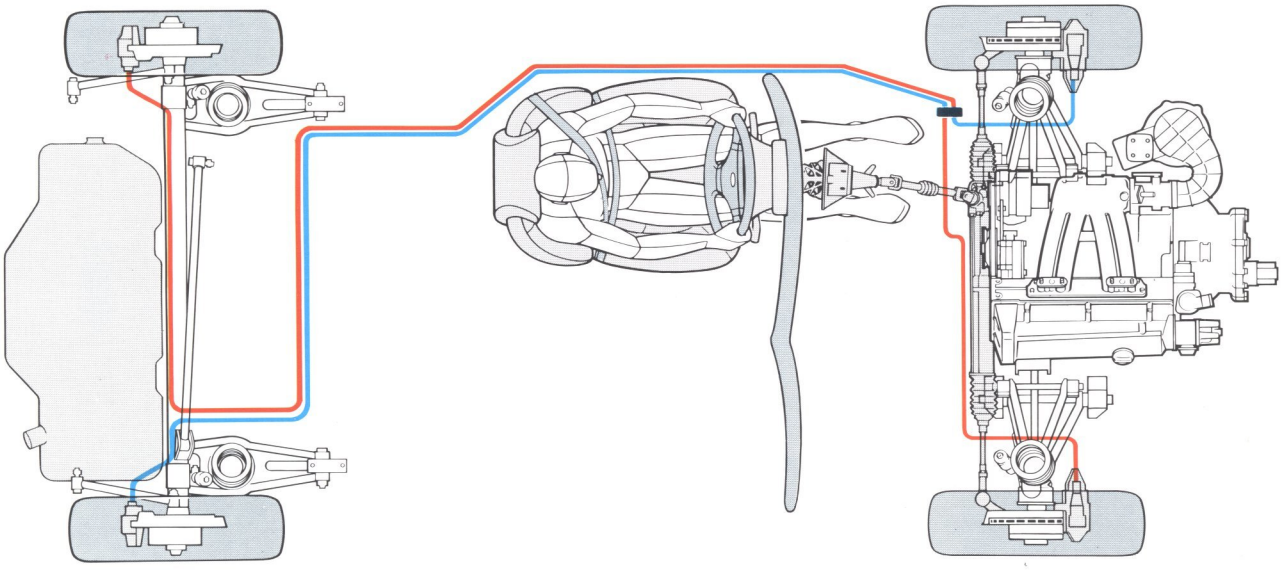
The brake system is diagonally split into two circuits. Each brake circuit actuates the brakes of one front wheel and the diagonally opposite rear wheel. As from Model year 1988, the self-adjusting handbrake acts on the rear wheel discs.

The brake lines are securely protected against mechanical damage and chemical attack. They are anti-corrosion treated and are run in ventilated passages inside the car. A warning lamp in the instrument panel lights up if one of the brake circuits should fail or if the brake fluid level should drop below the minimum. An indicator lamp also lights up to show the handbrake is applied.

The front discs on all 1988 models are of the ventilated type for better heat dissipation.

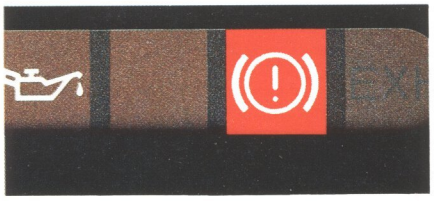
Asbestos-free pads

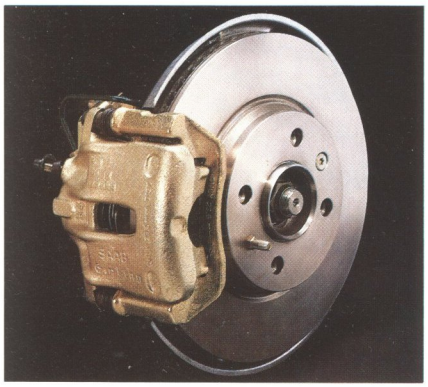
Asbestos-free friction material is used for all brake pads—organic on the rear pads and semi-metallic on the front. These materials offer a number of advantages compared to conventional asbestos material—they eliminate sources of asbestos



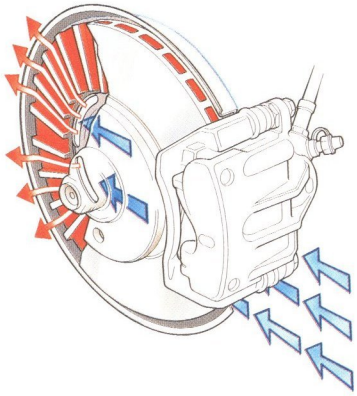
The brake system is diagonally split into two circuits. Each brake circuit actuates the brakes of one front wheel and the diagonally opposite rear wheel.

A float in the fluid reservoir senses the level of the fluid. If the fluid should sink below the minimum level, a warning light on the instrument panel will come on.





The Saab 900 has disc brakes all round to ensure the best possible braking effort, and equal brake performance on all wheels, even under extreme conditions.



The ventilated front disc-brakes have a large effective cooling area, which contributes to a low brake fluid temperature.

Saab was one of the first car manufacturers to eliminate a serious environmental problem by supplying brake pads with asbestos-free friction material.

pollution, their useful life is twice as long, they cause less wear of the discs, they reduce the sensitivity of the brakes to high temperatures, they reduce the risk of fading, they are quieter and they cause less dust build up on the wheels.

Saab was one of the first car manufacturers to introduce asbestos-free friction materials as original equipment for the brake pads. This was mainly due to the favorable design of the Saab brake system—with disc brakes all around, floating calipers, and brake discs with large effective cooling areas, which contributes to keeping the brake fluid temperature low.

Smooth braking

The master cylinder foot-brake system is equipped with a servo unit which amplifies significantly the pressure in the hydraulic system. Relatively light pedal pressure is sufficient to achieve a given braking effort.

The hydraulic fluid container incorporates a level switch. The switch lights up the red warning lamp in the instrument panel if the hydraulic fluid should drop below a predetermined level. Since the hydraulic fluid container is common to the brakes and clutch, the warning lamp has a dual function. In the event of hydraulic fluid leakage, the clutch will become inoperative first, which serves as an additional warning to the driver.

The master cylinder is designed so that both hydraulic circuits will be actuated simultaneously and at the same pressure. The risk of the car pulling to one side when the brakes are applied is therefore reduced, and the wear of the brake pads is more uniform.

The brake system is a car's most important component as far as safety is concerned. The Saab 900 has extra large discs on all four wheels.

Low steering wheel effort and good straight-line stability are the hallmarks of a good steering system. Moreover, the steering system must have no backlash and must provide good steering wheel feel.

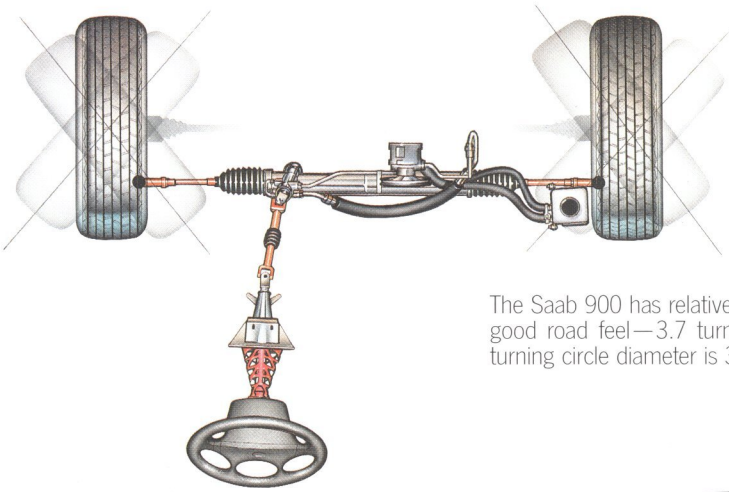
Steering

The rack-and-pinion steering in every Saab provides immediate and accurate response of the wheels to all movements of the steering wheel. The location of the track rod ensures that the steering will be insignificantly affected by vertical movements of the wheels in the suspension springs. The car will stay on a steady course, even when it is travelling on an irregular road surface. For safety reasons, the steering gear is located far back in the engine bay, where it is well protected behind the engine.

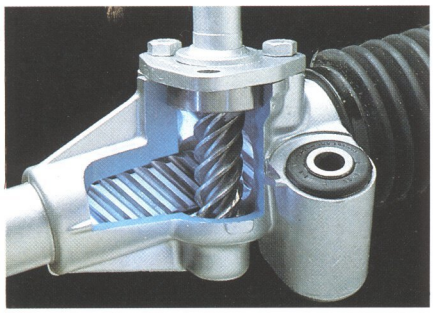
Saab 900 automobiles are supplied with power steering, which reduces significantly the steering wheel effort, above all in city traffic and in close maneuvering. Due to its refined design, the power steering gear is superior in all respects to manual steering.

The turning circle diameter is 33.8 ft (10.3 m) between curbs. The number of steering wheel turns lock-to-lock is 3.7 turns.

The power steering used by Saab provides good feel of the road and excellent directional stability—without kick-back or "sponginess".

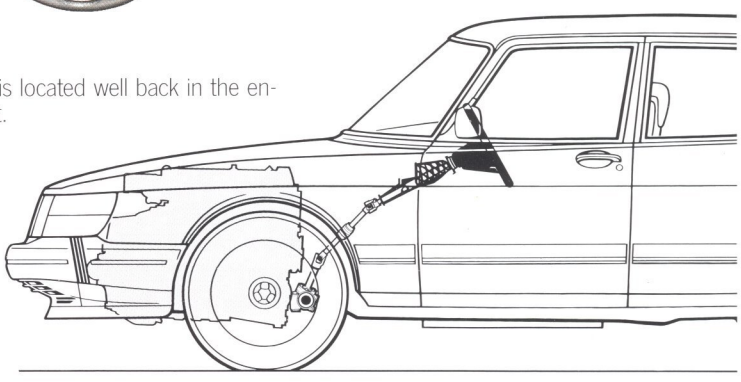


The Saab 900 has relatively direct steering for good road feel—3.7 turns lock to lock. The turning circle diameter is 33 ft 10 in.



The steering gear of the Saab 900 is a rack-and pinion type. It is completely free from backlash and has a minimum of resilience—without continual maintenance.

The steering rack is located well back in the engine compartment.



Car tires have a very tough and vital task. The contact area between each tire and the road is no larger than the palm of your hand. But the tire must still be capable of absorbing the enormous forces arising during fast cornering and hard braking from high speeds.

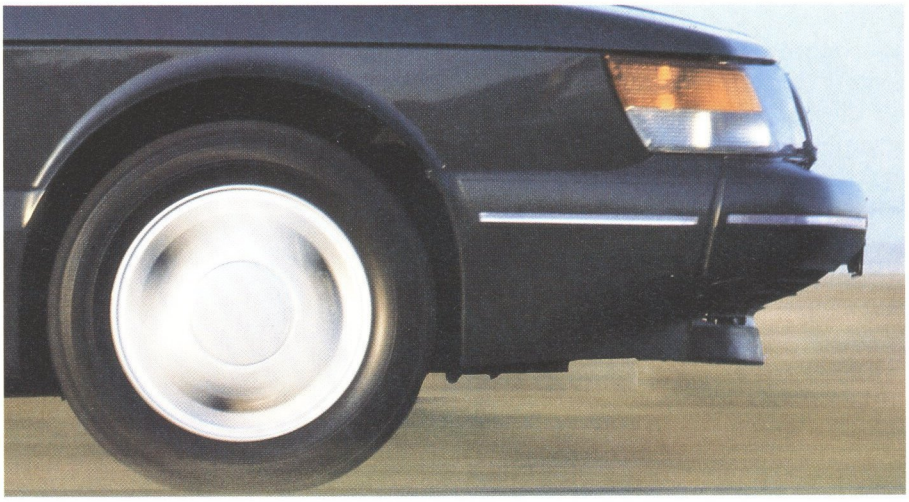
Wheels and tires

The Saab 900 is fitted with large 15-inch wheels. This provides good ground clearance, good comfort and excellent mobility on loose surfaces, such as sand and snow. The large wheels can also accommodate large brake discs, and they simplify the service work on the brakes. In addition, the wheels of the Saab 900 are self-centered on the hub, which ensures excellent concentricity, thus minimizing the risk of vibrations.

All models in the 900 line are fitted with low-profile tires, high-speed rated types on the Turbo models and low-resistance types on the 900S and the 900.

Intensive work is being devoted to the development of tires with low rolling resistance, and Saab is participating actively in the testing work. Back in 1980, Saab was one of the very first car manufacturers to introduce tires with low rolling resistance. Since the rolling resistance of these tires is about 20% lower than that of conventional radial-ply tires, the fuel consumption is reduced by 4–6%. Low rolling resistance is achieved by low tire profile and appropriate design of the tread, and by employing a grade of rubber with very low internal friction. All work devoted to reducing the rolling resistance also extends appreciably the useful life of the tire. A very high standard of ride comfort and road behavior are also achieved.

Low-profile tires are designed primarily for safe motoring on all roads under most conditions. Winter tires, with or without studs as appropriate, are recommended for icy and snowy conditions.



Large, 15-inch wheels help ensure a comfortable ride and an excellent grip on snow or other loose surfaces. They can also accommadate large disc brakes.

Spare wheel

In common with most other car manufacturers, Saab has chosen to equip its cars with a compact, lightweight spare wheel, in order to save weight and space. This wheel should only be used for the short time necessary before the ordinary wheel is repaired.

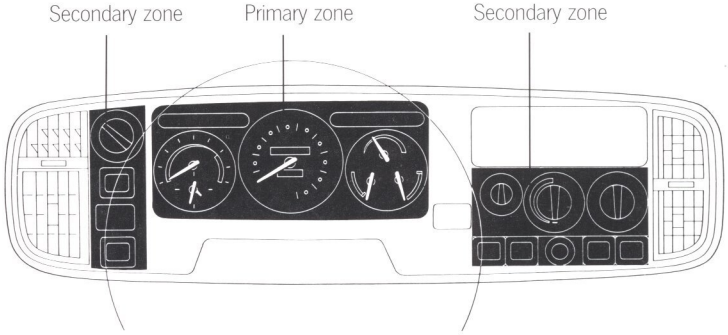
The compact spare wheel can be used during any journey—even if the destination is still a fairly long distance away and the car is fully laden. So if a tire should puncture, it need not be repaired until you have reached your destination. But the car should not be driven continuously at speeds higher than 50 mph (80 km/h).

The compact spare wheel is small, light and easy to use.

All drivers must be given every opportunity to carry out all driving operations conveniently, safely and quickly.

Driver's environment

In the Saab 900, the driver can reach all controls without changing his seating position or taking his eyes off the road. The controls and instruments are carefully arranged and the instruments are at a proper level, where they can be read at a glance. The logical design of the analog instruments substantially reduces the risk of errors in hectic or hazardous traffic situations.

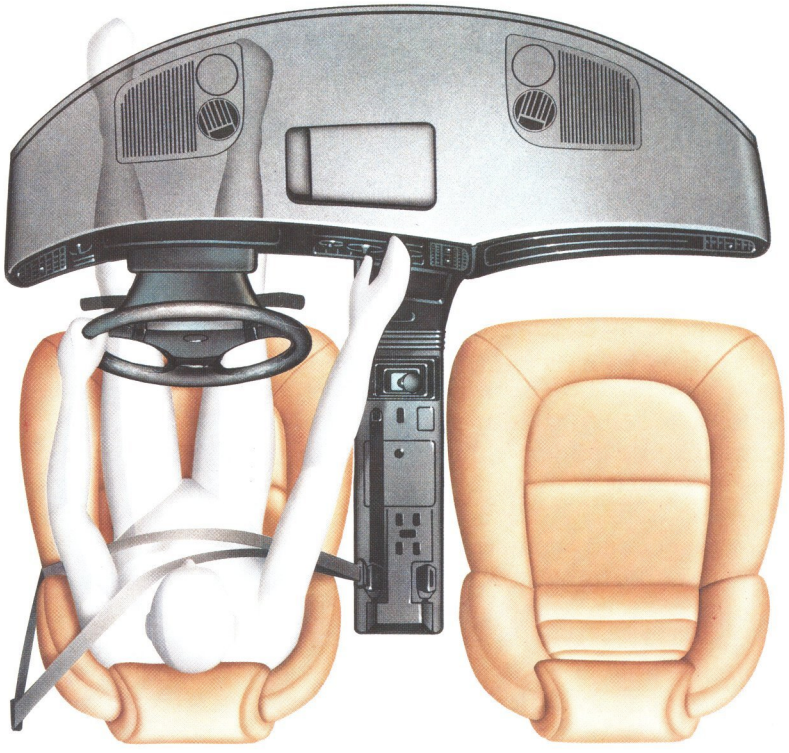


The primary zone immediately in front of the driver contains instruments, warning lamps and the stalks for the headlamps, direction indicators, wipers and washers. The secondary zones on the sides contain switches for the lighting and the controls for the heating and ventilation system.

Sensible locations of controls

Due to a sudden change in a traffic situation, the driver may instantly need to use the headlight flasher or horn, or to switch the wipers to maximum speed—without fumbling for the controls and possibly losing command of the situation. So the stalks and switches for all important functions are close at hand, within fingertip reach. The pattern of operation of the controls is based on simple, easily comprehensible logic.

The front-seat passenger (or a driver who is unaccustomed to the car) must not be able to switch off the headlamps by mistake while the car is under way. The lights are therefore controlled by a rotary switch which is located on the far left side of the instrument panel. The controls for the radio, heating and ventilation, cigarette lighter, rear window demister and hazard warning lights are arranged towards the center of the panel.

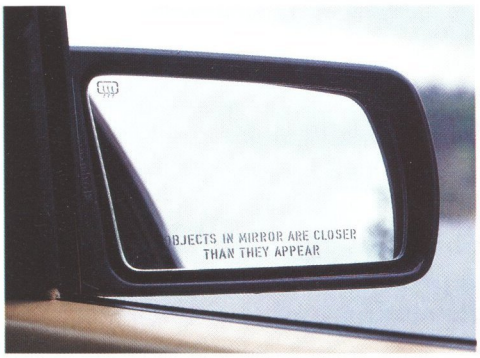


In the Saab 900, the driver can reach all controls without his eyes leaving the road. The controls and instruments are grouped in the driver's field of vision and the instruments are located at a proper level to allow for fast reading.

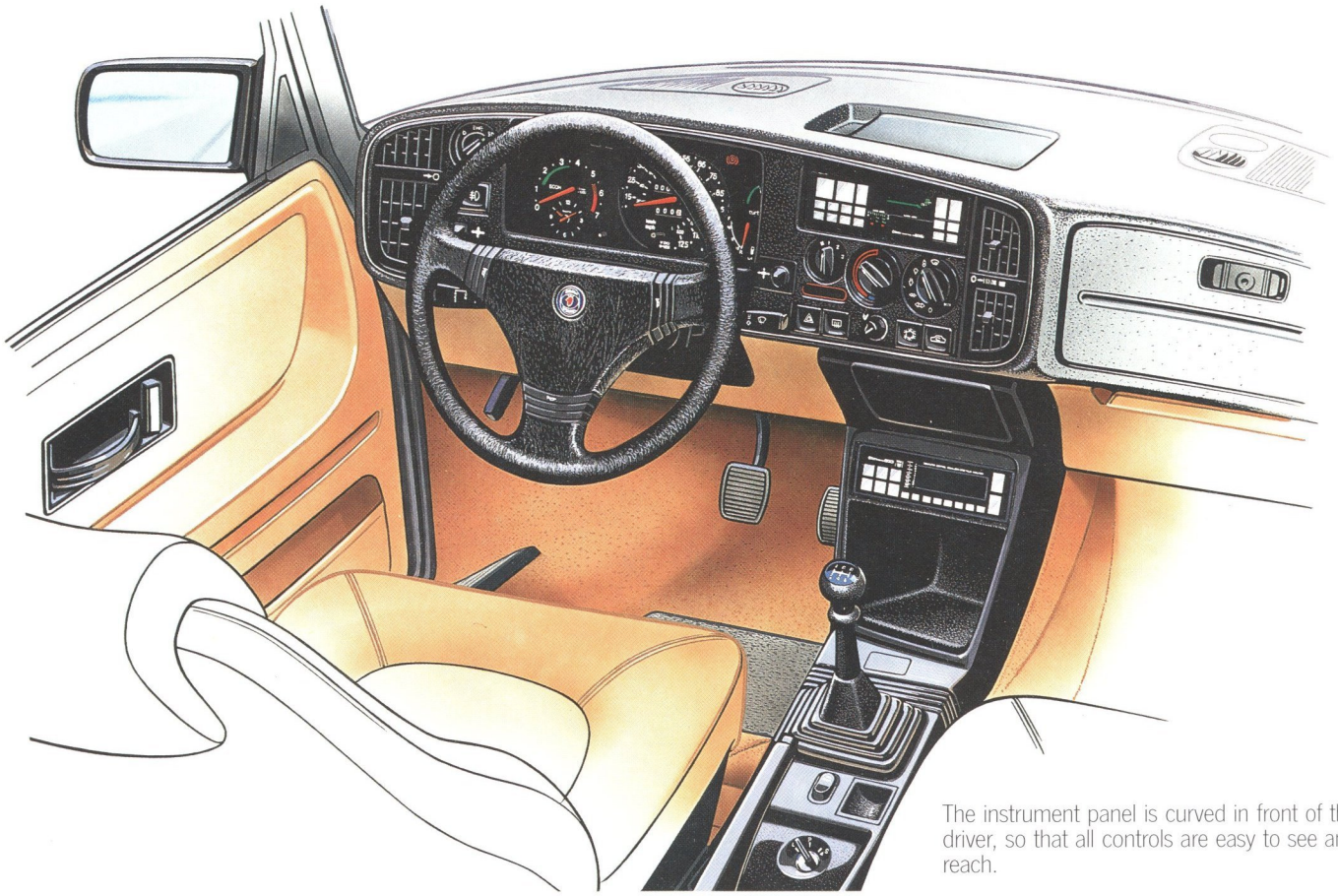
Outer rear-view mirrors

The outer rear-view mirrors are adjustable from the interior—electrically on 900S and Turbo models. The mirror on the right hand side is convex to assist in lane changing after passing.

The inner rear-view mirror can be deflected for night use.



The outer rear-view mirrors are electrically adjustable and heated on 900S and Turbo models.



The instrument panel is curved in front of the driver, so that all controls are easy to see and reach.

Starting controls

All starting controls, including the ignition switch and gear lever, are located on the center console between the front seats. The handbrake lever must be close at hand, but must not cause injury in the event of an accident. Since it should be accessible to the co-driver in an emergency, it is also located between the front seats.

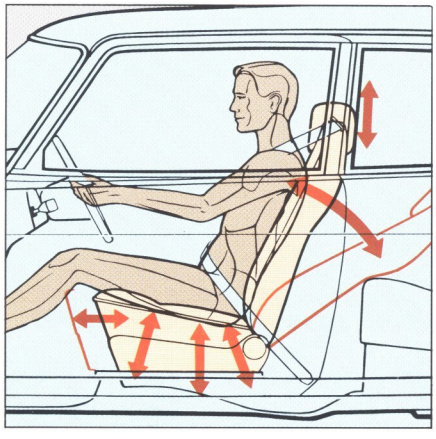
The center console includes all starting controls—ignition switch, handbrake lever and gear lever.

A driver's seat of sound anatomical design promotes relaxed and safe driving, hour after hour. The design of this Saab seat is a product of in-depth orthopedic and ergonomic studies and exhaustive testing.

Driver's seat

The contoured design and firm padding of the Saab seat provide the support necessary for comfort. Although thick and soft padding may feel more comfortable at first, it will usually prove to be unsteady. The occupant would then constantly be tensing his muscles to keep his body steady, particularly when travelling fast on winding roads.

To provide firm support where it is needed most, the backrest and seat cushion of the Saab seat consist of several foam rubber components of varying firmness, embedded in a body of solid foam rubber. The lumbar support is designed to adjust itself automatically to the driver's stature and seating position.



The backrests and cushion are contoured. The backrest is reinforced with firmer material in the lumbar region, the shoulders and the sides. Special recesses are provided for the shoulder blades.

The seat is adjustable fore-and-aft, and the seat cushion is adjustable for height and slope. The backrest rake is steplessly variable down to the reclining position, and the head restraint can be adjusted for height.

"...its firm but perfectly supporting seats always proved a welcome return after other less satisfactory products and could loosen knotted back muscles within minutes."

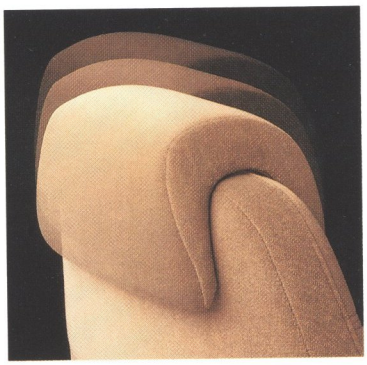
(WHAT CAR? Great Britain)

Heated seats

To many people who are susceptible to backache, cystitis and rheumatic ailments, winter is a season of acute suffering. These complaints are often caused by cold car seats, particularly if a person uses the car frequently and for long periods of time. If the car is thoroughly cold on a winter's day, it may take 20 minutes or more for the occupant's body heat to warm up the seat.

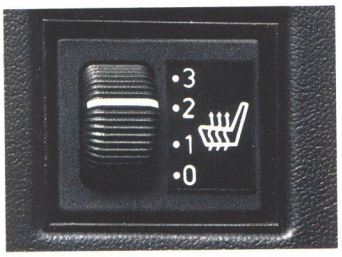
The front seats have electric heating as standard. The seat cushion and backrest both incorporate heating elements, housed in net pockets and backed by aluminum foil to reflect the heat upwards. When the interior is cold, power will be supplied to the heating elements. The driver's seat of the 900S and Turbo also has a rheostat to control the temperature.

A comfortable driving position which allows relaxed and safe driving, hour after hour.



The supple lumbar support adjusts itself automatically to the driver's stature and seating position.

The height of the head restraint can be adjusted in several snap settings over about 3.5 inches (90 mm).



Sturdy steel frame.

The automatic electric heating of the front seats is thermostatically controlled—manually adjustable for the driver's seat on 900 S and Turbo models.

In three-door models, the backrest folds forward to provide easy access to the back seat. The latch can be reached from the outside of the car and from the back seat.

The depth of the seat cushion provides firm support for the whole of the thigh.

Latch handle for the fore-and-aft adjustment.

The seat cushion is adjustable in height and slope.

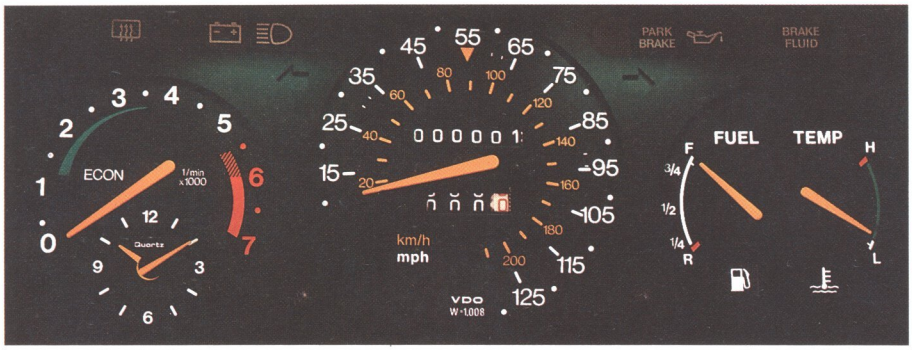
Adjustment of the backrest rake.

Tests have demonstrated that the peripheral vision of a person will detect changes in the position of a large instrument needle much more easily than changes in the figures on a digital instrument or the bar on a bar-type instrument.

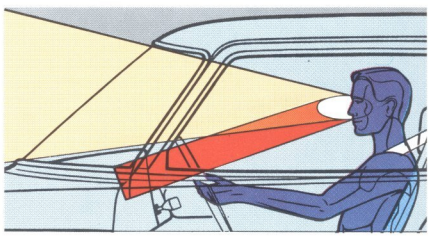
Instruments

The instruments of the Saab 900 are large and distinct, and have white symbols and yellowish-orange needles, set against a matte-black background. The instruments are deeply recessed, so that they will not dazzle the driver by reflected light and will not cause reflections in the windshield at night. The instruments and controls are indirectly illuminated with green light. Green light has proven to be the most favorable illumination in a darkened environment in which the viewer's eyes are accustomed to looking at the surroundings lit by the headlamps. Red light is totally unsuitable under these conditions and may even become confused with the red lighting on the rear of other vehicles in traffic. The instruments are always illuminated when the engine is running, enabling them to be read even in a tunnel or garage when the ambient light is temporarily reduced. The warning and indicating lamps are normally dark —the colors and symbols only appear when the lamp lights up. Each push-push switch is marked with a symbol showing its function. The switches are illuminated from the inside—with a dim light when the function is inoperative and with a stronger light when it is switched on.

The instrument panel provides for up to 16 warning and indicating lamps and 6 push-push switches, including an extra push-push switch for the optional fog lights.



Large, round instruments with white symbols and orange-colored needles, set against a matte black background. Easy to read, the driver's peripheral vision will detect changes in the positions of the needles.



The ample adjustment for height of the driver's seat ensures that even a driver of short stature will have good all-roud visibility and a good general view of the instruments and controls.

The instruments and controls are indirectly illuminated with green light, which has proven to be most favorable when the headlamps are on and the driver uses daylight vision in darkness.

To be able to drive safely, the driver must have good visibility and must be clearly visible to other road users. But good lighting and visibility are also of vital importance to driving comfort.

Visibility and lighting

Aerodynamic headlamps with replaceable halogen bulbs are fitted as standard.

The large, front side-light assemblies are of wrap-around design, so that they will be clearly visible from the side. Due to their high location, they are less liable to contamination by road dirt.

The windshield washers and wipers are actuated by the same stalk on the right-hand side of the steering column. Starting from the neutral position, the stalk positions are as follows:

1. Windshield wipers, intermittent operation.
2. Windshield wipers, low speed.
3. Windshield wipers, high speed.

When the washers are actuated by pulling the stalk toward the driver, the wipers will automatically make 3–5 sweeps. The washer fluid container has a large capacity of 1.6 gallons (6 liters), so it need seldom be topped up.

The rear window is equipped with an electric demister as standard. The heating elements and the effective air defroster quickly provide good all-round visibility, even in cold and humid weather. Moreover, the aerodynamic lines of the body keep the rear window clear of road dirt and snow under most weather and road conditions while the car is in motion.

Aerodynamic headlamps with replaceable halogen bulbs are fitted as standard.

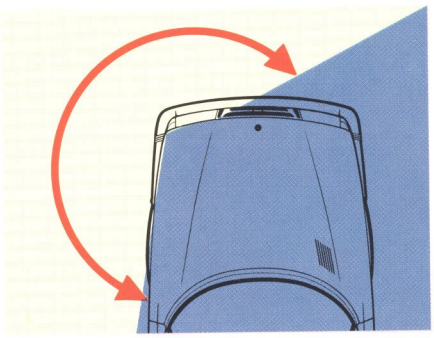
The windshield wipers can be run at two speeds or intermittently. When the washers are actuated, the wipers will automatically make 3–5 sweeps.

Lighting

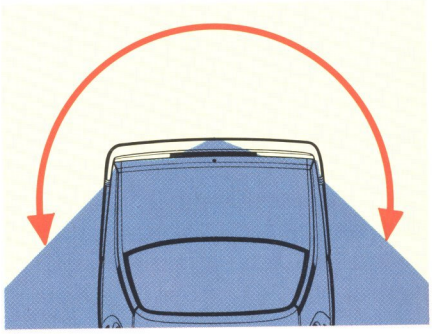
The large direction indicator lights combined with the sidemarkers are at the top, with the parking and cornering lights below them. The visibility sector is very large, and the locations of the direction indicators make them clearly visible to drivers of tall vehicles, such as buses and trucks. A side direction indicator is also provided, between the front wheel arch and the door. This contributes further to road safety, particularly on multi-lane roads.

The rear light clusters are designed so that they will be clearly visible to other road users, even diagonally from the side. The rear lights are duplicated on both sides, for extra reliability and road safety. A center, high-mounted brake light located at the base of the rear window provides additional visibility to motorists in following traffic.

The headlamp lenses blend into the lines of the body. The design ensures improved light distribution, particularly on the low beam, and reduces the risk of damage in the event of a collision. The aerodynamics are also improved.



The direction indicator lights are a wrap-around design, for best possible visibility within a very large sector.



The rear light clusters are also a wrap-around design.

The duplicated rear lights on each side have a large light area and contribute to improved reliability.

Roadholding and road safety

Optimized chassis geometry:
- Good road behavior.
- Maximum ride and driving comfort at all speeds.
- Attenuates vibrations and eliminates the fatiguing swaying and pitching of occupants bodies.

Straight and lightweight rear axle:
- The track is constant at all times—for optimum grip, even on winter roads.
- The rear axle exerts no steering effect and is unaffected by lateral and braking forces.
- Low unsprung weight for good roadholding, a smooth ride and a minimum of rolling tendencies.
- Varying loads have very little effect on the road behavior of the car.

Engine located far forward over the driven front wheels that support 61% of the car's weight:
- Excellent directional stability, even in strong crosswinds.
- Excellent grip, even on slippery road surfaces.

Rack-and-pinion steering:
- High precision, fast response.
- Good feel of the road.
- Completeley free from backlash.
- The steering gear is protected behind the engine.
- Power-assisted steering.

Large 15″ wheels:
- Good mobility in snow, sand and other loose surfaces.
- Ample ground clearance.
- Space for large brake discs.
- Improved ride comfort.

Disc brakes all round. Dual diagonal circuit brake system:
- High active safety. At least 50% of the braking effort is still available if one circuit should fail.
- Ventilated front discs.
- Asbestos-free brake pads.
- Floating calipers for maximum braking effort.
- Self-adjusting handbrake.

Each front wheel mounted in two lightweight wishbones; pivot-mounted coil springs with long spring travel:
- Sturdy mounting of the front axle, springs and shock absorbers.
- Low sensitivity to imbalance of the wheels.
- The springs are always straight and provide the best conceivable springing action.
- Good progressive springing effect on rough road surfaces.

Driver's seat of anatomically correct design and with many adjustment facilities:
- The design of the seat is a product of in-depth orthopedic and ergonomic studies.
- Lumbar support adjusts itself automatically to the driver.
- A very wide range of individual adjustments.
- Automatic electric heating elements.
- Exceptional comfort on long journeys.

Ergonomic design of the instrument panel:
- Logical location of instruments and controls for fast and reliable reading.
- All switches and controls are within easy reach.
- Prevents errors in critical situations.

Large, round instruments:
- The instruments and warning lamps provide immediate information—in daylight and at night.
- Non-reflecting instruments with indirect illuminated light.

COMFORT AND SAFETY

"...the ride is almost as relaxed as in a first-class railway carriage."

(AUTO ZEITUNG, Germany)

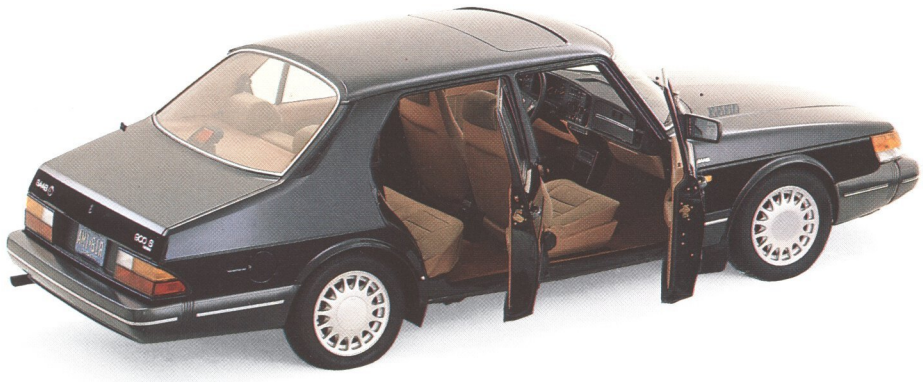
The interior must be sufficiently roomy to assure the occupants of a high standard of comfort, even on long journeys, and it must also be designed to help protect the occupants in the event of an accident.

Interior space

The interior of the Saab 900 is appreciably larger than the exterior would suggest. Due to the wide doors and the large opening angles, the occupants can climb into and out of the car with ease. The doors protect the sill members from road dirt. Moreover, the sills are low and set back, which contributes further to the ease of entry and exit. On the four-door model, the rear door frame follows the contour of the backrest. On the three-door model, the front seat backrest can be folded down for convenient access to the back seat. A grab handle is provided below the glove compartment, so that the front seat passenger can easily adjust the seat fore and aft while seated.

900S and Turbo models are equipped with an extra center console below the instrument panel. The console includes practical storage compartments and space for accessories or audio components.

Audio components on all models can be removed easily with the special tools provided, minimizing the chance of theft. High output AM/FM/cassette players on 900S and Turbo models also have a special electronic lock out system, to further deter theft. All models include stereo speakers at the front and rear, as well as electric antenna. Turbo models also include a graphic equalizer/spectrum analyzer.



According to Saab designers, comfort begins at the choice of basic design and at the decision that functional considerations guide the overall design.

The Saab 900 has an interior of ample proportions—without bulky drive shaft and without wheel housings which encroach on the

The doors have a wide opening angle. The sills are set back and protected against road dirt.

The front console is standard on 900S and Turbo models and includes practical storage compartments, which can also be used for installing additional gauges, audio equipment or other accessories.

space available for the outer passengers in the back seat. The headroom is also ample.

The interior lighting is switched on automatically as soon as one of the side doors is opened. A separate switch for the interior lighting is provided on the center console. In addition to the dome lamp, a map-reading light is provided behind the inner rear-view mirror—in a location where it will not dazzle the driver. A lamp is also provided for lighting the ignition switch.

The front seats

The Saab seats have been designed in collaboration with experts in physiology. The objective was that at least 95% of all drivers should be able to adjust the seat to a comfortable and anatomically sound driving position. In attaining this, we have provided the driver with relaxed seating, and a relaxed driver is a safer driver.

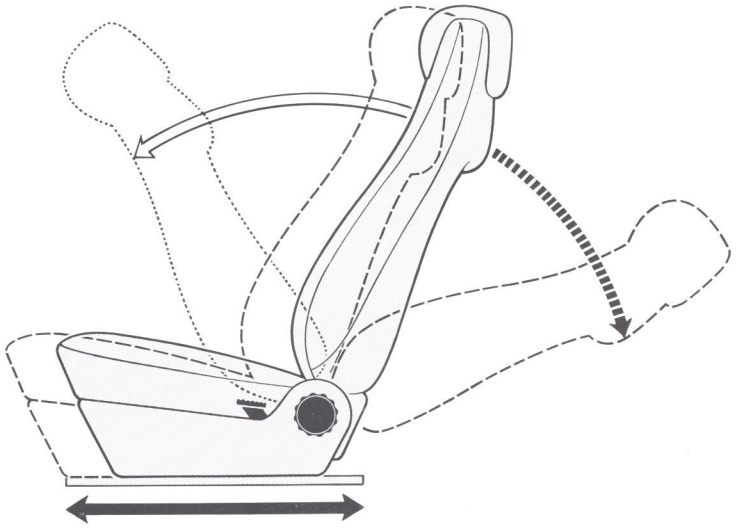
Aeronautical and military research has revealed that a person's ability to think and act is impaired at low temperatures. Judgement and feelings are blunted, and muscular movements are less precise. A cold driver is a stressed driver. So the electrically heated front seats of the Saab are more than a comfort feature—they also contribute substantially to road safety.

Back seat

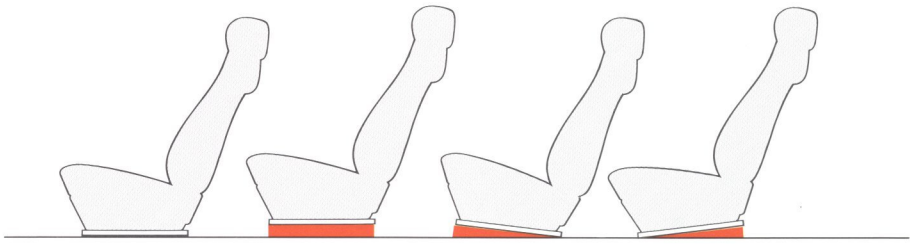
According to motoring journalists throughout the world, the Saab 900 has one of the most comfortable front seats on the car market. But the back seat comfort is also high. The back seat cushion consists of more than 400 fine-gauge springs, covered with several layers of padding. The seating comfort is comparable with that of a truly exclusive armchair. The standard seats are upholstered with velour—luxurious, airy and comfortable, in summer and winter alike. Leather upholstery is available as an option on Turbo models.

Three persons can be seated in the back seat. No bulky drive shaft tunnel encroaches on the floor space or the padding of the back seat cushion. On 900S and Turbo models, the back seat backrest is slightly contoured for two persons and is provided with a folding center armrest. All 900S and Turbo models are also equipped with soft, comfortably shaped headrests in the back seat, to round off the exceptionally comfortable interior. The headrests consist of foamed material, moulded around an energy-absorbing backing plate. The headrests can easily be removed before the back-seat backrest is folded down.

There are two different seat de-



The front seats are designed for relaxed, restful motoring. The various adjustment facilities provide excellent scope for further adjustment to suit individual preferences.

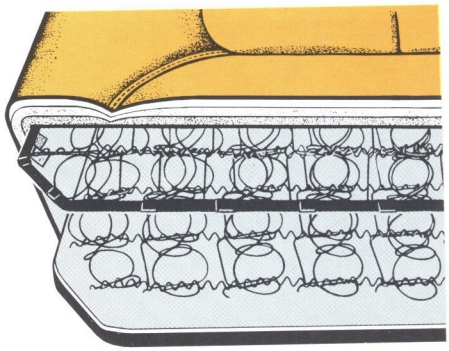


The controls at the front edge of the driver's seat allow it to be adjusted for height and rake to any one of four positions.

The padding at the rear of the front seats provide good protection for the back seat passengers in the event of a collision. Even so they should always wear their seat belts.

900S and Turbo models are equipped with practical pockets in the rear of the front seat backrests.

signs, one for the Saab 900, and one for the 900S and Turbo models. The Saab 900 is upholstered in velour upholstery, while the 900S and Turbo are upholstered in luxury velour. Leather upholstery is optional on Turbo models except the SPG and Convertible on which it is standard. The velour fabrics are very hard-wearing and durable. The leather upholstery is made of a soft, glove grade of leather on the seating surfaces.



The seat cushion of the back seat consists of more than 400 coil springs—designed in the same way as a truly exclusive armchair.

There's no bulky drive shaft tunnel or wheel arches to reduce the available space in the back seat, so every part of the seat is as equally comfortably upholstered.

Large quantities of fresh air at a suitable temperature must continually flow through the interior, to ensure the comfort of the driver and passengers and to keep them alert, even on long journeys.

Heating and ventilation

The ventilation system of the Saab 900 delivers a uniform flow of air at the preset temperature—regardless of the speed of the car.

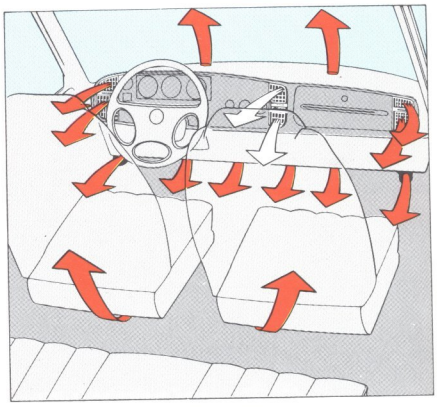
Simple and logical

In many other cars, the heating and ventilation systems are difficult to understand and their precision is so poor that setting must be carried out by trial and error, which distracts the driver from the job of driving the car.

The heating and ventilation system of the Saab 900 is logical and easy to understand, and is exceptionally precise and easy to adjust.

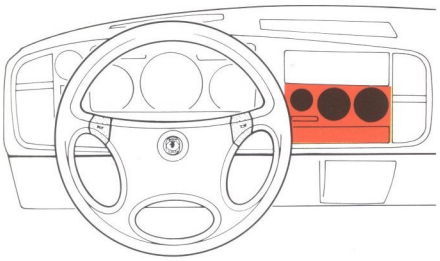
The system includes a simple, seven-position rotary control for presetting the ventilation air distribution. The air outlets on the instrument panel can be oriented in the required direction, and the air flow can also be varied from minimum to maximum by means of a control damper. The heating and ventilation controls are as follows:

– three-position rotary control knob for three fan speeds (the fan always runs at a minimum of quar-

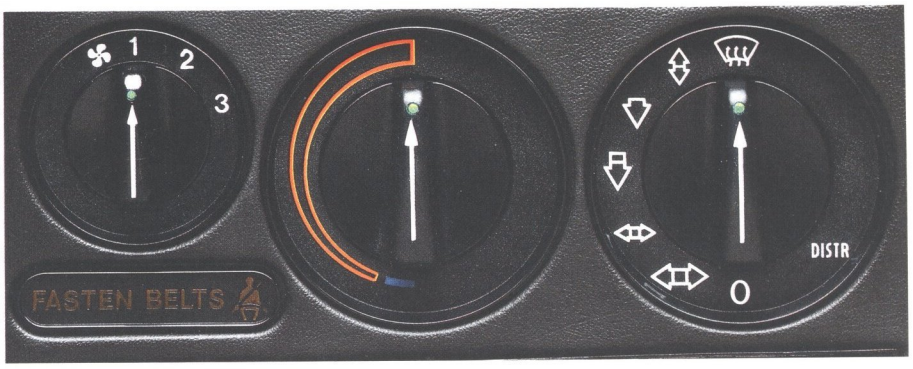


Preheated, clean air is distributed uniformly throughout the interior of the car through 13 different outlets.

The large capacity heating and ventilation system in the Saab 900 ensures a comfortable interior temperature quickly.



The heater controls are located well up on the instrument panel to make them easy to see and reach, without distracting the driver's attention from the road.



The rotary heater and ventilation controls provide a simpler, more accurate alternative to slide controls. An added advantage is the ease with which it is possible to "feel" the precise position selected at any time.

ter speed, unless the air distribution control is set to 0);
- temperature control knob;
- air distribution control with vacuum unit. The knob has seven snap settings arranged in a programmed, logical order to operate vacuum-controlled dampers which distribute warm and cold air in the interior.

The fresh air flows through a heat exchanger, where it is heated before being discharged into the interior. The number of air outlets and their locations are of major importance to the occupants' sense of comfort. If the air velocity were higher than 0.3 m/sec, the car would feel drafty. The Saab 900 is equipped with vacuum-controlled dampers which distribute warm and cold air through 13 outlets, arranged at strategic points in the interior. In addition, two separate dampers are provided for cold air. The many outlets together ensure a gentle but very effective flow of air through the interior.

When the fan is running at maximum speed, 3.5 cu ft (100 liters) of clean, fresh air flow through the interior every second. To ensure the best possible evacuation capacity, Saab engineers have determined the locations of the exhaust air outlets by wind-tunnel tests.

1. After starting from cold in the winter, the air distribution knob should be set straight up, the temperature knob to maximum, and the fan to 3. This provides maximum defroster action at the windshield and the side windows.

2. After a short time, the distribution knob should be turned one snap setting to the left. The air is then distributed equally onto the windows and towards the floor.

3. The next setting provides maximum heat at the floor. A gentle flow of air through the defroster outlets keeps the windows clear.

4. Maximum heat at the floor and, if required, a simultaneous supply of cold air through the two fresh air nozzles in the center of the dashboard.

5. Fresh air distribution through the dashboards outlets. One of these is the comfort setting.

6. Maximum setting, in which the fan starts automatically and runs at a higher speed than at fan setting 3, regardless of the setting of the fan control knob. (Recirculation is automatically provided.)

7. All vacuum-controlled air dampers are closed and the fan is switched off.

Fresh air outlets

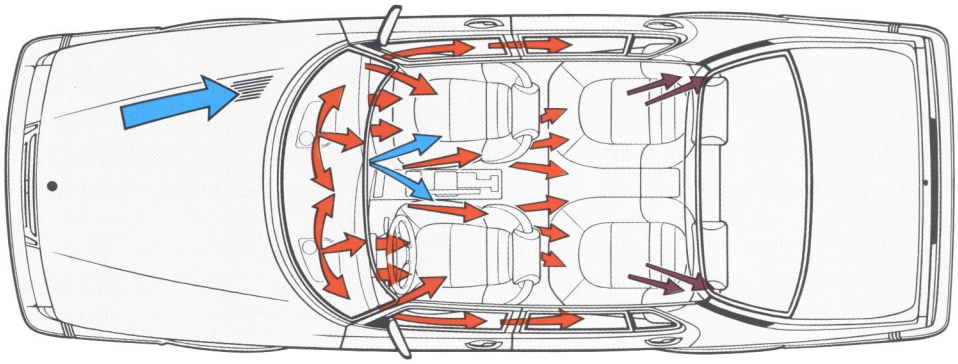
The fresh air outlets in the center of the instrument panel are features that actively affect the sense of well-being and safety on a long journey—particularly at night and in cold weather, when the heating system is running. The driver and co-driver can direct a flow of cool air onto their faces—while warm air is still supplied to the remainder of the interior.

Air conditioning

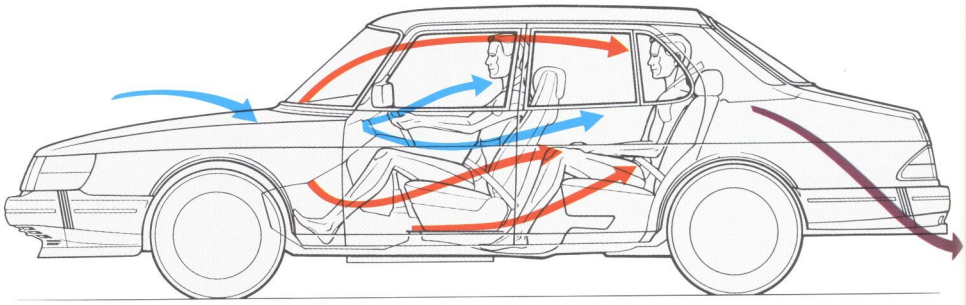
All 900 models are equipped with air conditioning, which is designed by Saab to cool the hot, humid outside air in the summer, and deliver dry, cool air into the interior. Activation of the AC compressor and recirculation of the air are controlled by push-push switches below the ventilation controls. The temperature control knob provides the same function as in the heating mode. The recirculation switch closes the fresh air intake and opens the recirculation flap to recirculate the air inside the car. This feature is intended for use when maximum cooling is required or to avoid exhaust fumes being drawn into the ventilation system when the car is in slow moving traffic. Recirculation is automatically provided in the maximum setting of the air distribution selector.

"Heating and ventilation is also very good indeed, with a versatile capability, including a fiercely powerful demister and center vents which give cool air independently of the heater."

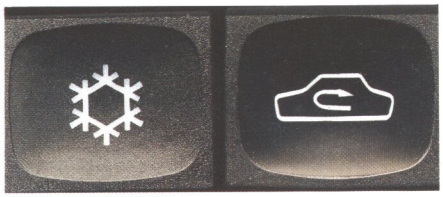
(WHAT CAR?, Great Britain)



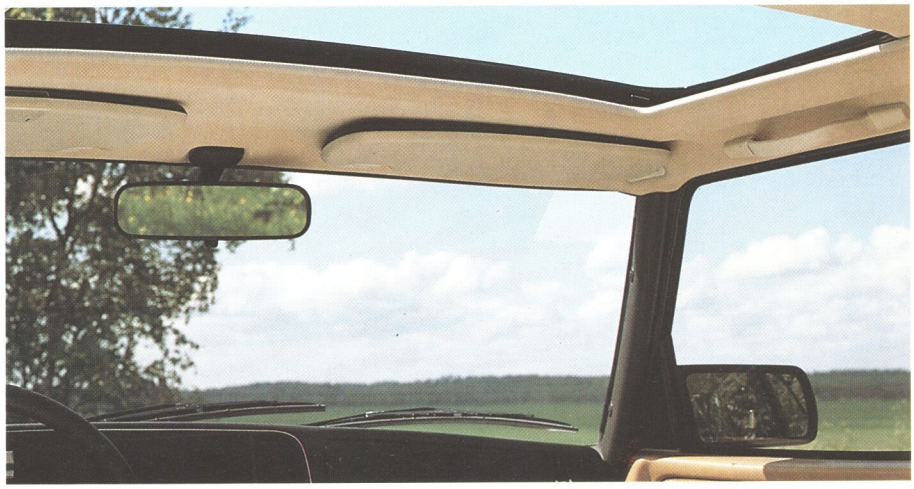
Air can be admitted into the interior through 13 outlets. Six of these are in the dashboard , and four of them can be controlled manually to provide the required direction and rate of air flow. Four outlets supply the footwells.



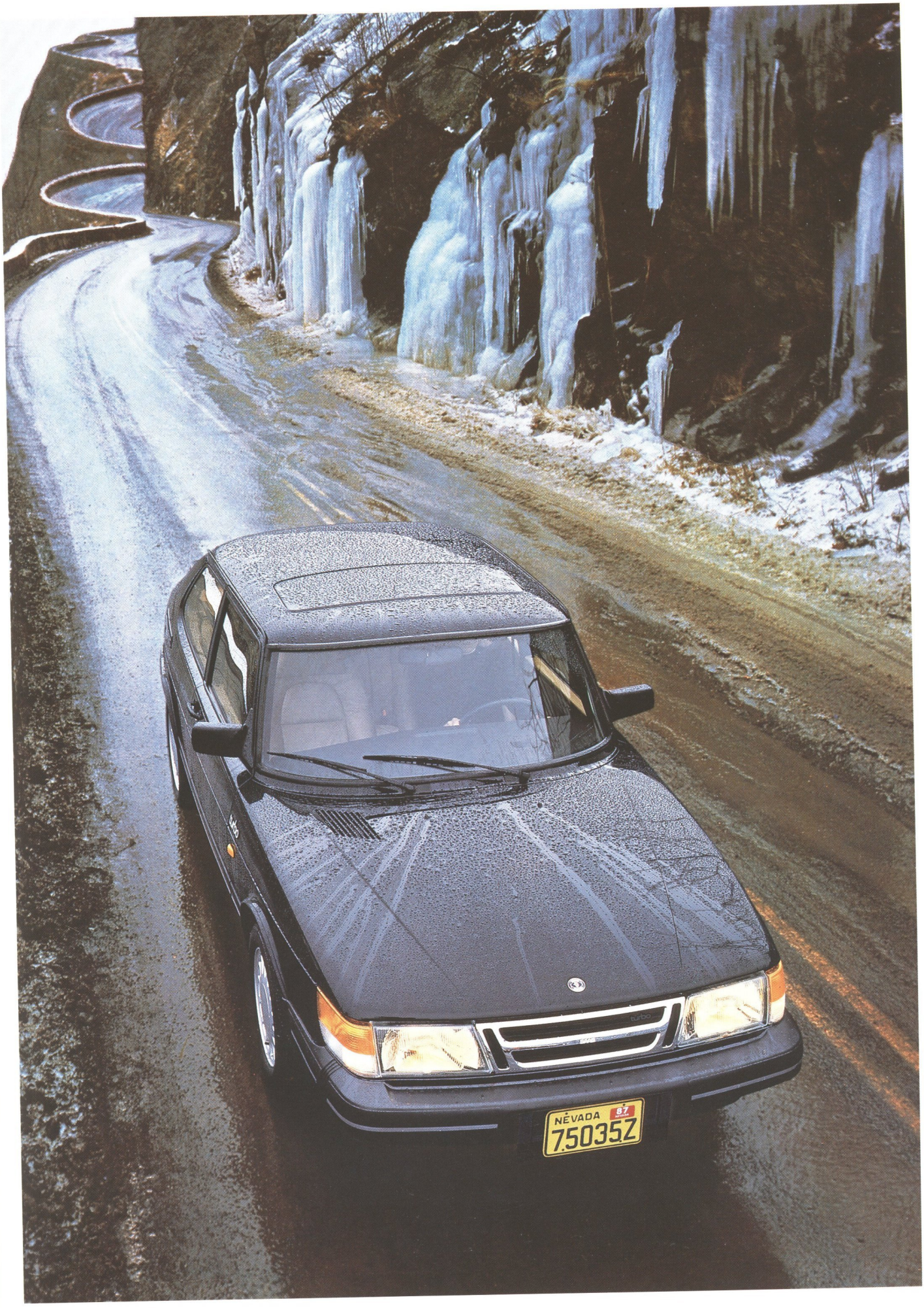
When the fan is running at maximum speed, 3.5 cu ft (100 liters) of clean, fresh air are blown through the interior of the car every second.



Pleasant conditions inside the car, even on a hot summer day, are assured by air conditioning.



The sunroof provides comfortable, draft-free ventilation and a high rate of air change in the interior. A sunroof is standard equipment on 900S and Turbo models, and is electrically operated on all Turbo models.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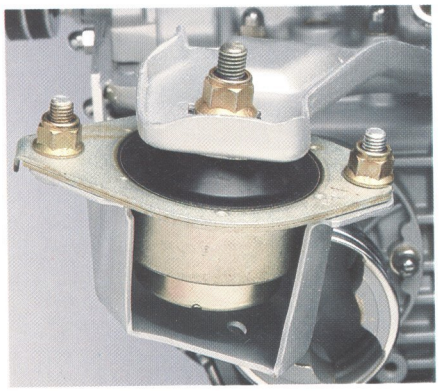
Noise and vibrations are fatiguing to the driver and passengers on a long journey, even though the sound level as such may not be objectionable.

Sound attenuation

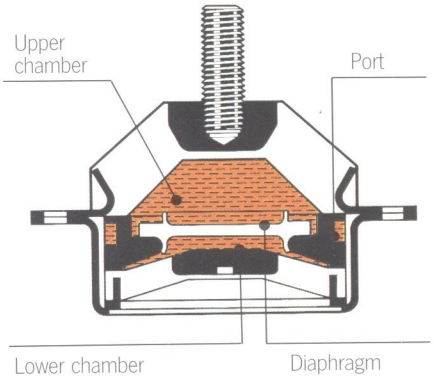
Comparative tests carried out by the motoring press demonstrate that the sound level in a Saab 900 is lower than in most other cars in the same price and performance class. This is the result of careful insulation and the variety of measures designed to suppress the sound at its source.

The engine is mounted on preloaded rubber elements enclosed in metal cases. Cars with 16 valve engines are equipped with hydraulic engine mountings. The steering gear is rubber-insulated. The choice of ventilation fan has been guided by sound level considerations rather than capacity level alone. The curved windshield and the low, smooth front provide exceptionally good aerodynamics and thus a low level of wind noise. The glass-fiber roof lining, the parcel shelf and the polyurethane foam side trim (on three-door models) are some of the sound-attenuating elements. The bulkhead between the engine bay and the interior is insulated on the inside, and the insulation is covered with a thin, pressed plate. The hood is lined with a form-fit sound-extinguishing mat. The carpet is backed by a thick layer of fluted polyester foam, bonded to a bitumen panel.

The moulded glass fiber roof lining is covered with velour and provides insulation against noise, heat and cold, as well as an impact-absorbing surface covering the roof and reinforcing members.



The more powerful models are equipped with hydraulic engine mountings that attenuate vibrations very effectively.



The hydraulic engine mounting has two chambers containing a special damping fluid. The chambers are separated by a diaphragm which takes up normal engine vibrations. If larger engine movements should occur, the fluid will be forced through a port from the upper to the lower chamber, equalizing the pressures. The damping action of the mounting is therefore progressive, with the resistance to movement increasing with load.

The interior is surrounded by sturdy steel members and reinforcements, to provide the occupants with the best possible protection in the event of a collision. The front and rear sections are designed to deform gradually in a collision, to absorb the impact forces as gradually as possible.

Safety in a collision

One of the objectives in the design of the 900 models was to conform comfortably to the collision safety regulations that are probably the world's most stringent—those on the U.S. market. Many of the safety features of the Saab 900 depend upon occupant use of the available restraint systems to provide the highest level of protection possible. To reduce the risk of serious injury should an accident occur, the seat belt restraint must be worn by every occupant in the car.

The striker plates of the door locks are fitted with backing plates, to prevent the locks from jamming. This feature, together with the softer sections purposely incorporated into the wheel housing and the fender flanges, makes it easier to open the doors after the car has been involved in a head-on collision. The hood includes reinforcements at the front and rear, a buckling zone in the center and special catches in the rear corners. This design prevents the hood from being forced in through the windshield in a collision. In the event of a head-on collision, the engine will be forced backwards and downwards, and will be constrained by the sturdy bulkhead. Most of the collision forces will be transmitted through the rugged longitudinal members and the wheel housings to the windscreen pillars, the bulkhead and its mountings. In a side impact, the energy will be absorbed mainly by the sills, the floor and door members, the extra-thick side panels, the bulkhead, the smoothly profiled floor pan and the transverse tunnel below the back seat.

The 900 models are designed to conform with the most stringent safety regulations in the world.

Protective padding

The padding in a car should be firm enough to prevent "bottoming", but must also be matched to the retardation and shocks that the human body can withstand.

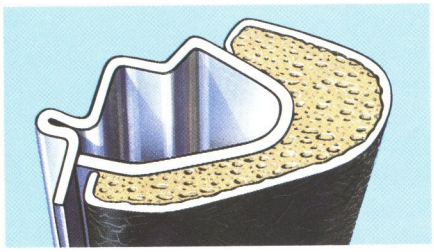
Saab cars are subjected to barrier collision tests at various angles, drop tests, skid tests and other realistic trials, to ascertain that the interior will more than just conform to specified safety standards.

The padding on the windshield pillars can withstand very heavy impact without bottoming. The windshield is made of laminated glass. Due to the ample distance between the front seat occupants and the deeply curved windshield, there is negligible risk that the occupants will be thrown against the windshield, provided that their seat belts are fastened. If the windshield glass breaks, the plastic lamination layer will hold the pieces together. If a side or rear window should shatter, it will disintegrate into small granules, without any long, sharp slivers.

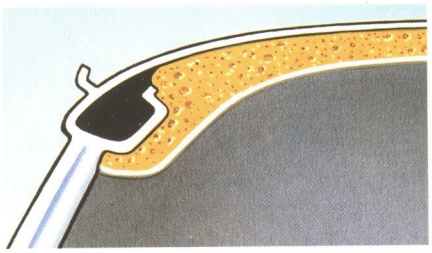
The pressed glass-fiber roof lining, which extends across the reinforcing members and edges of the roof, is covered with velour and provides excellent impact absorption.

In the four-door model, the door trim consists of a padded fiberboard panel, covered with fabric and fabric-backed plastic. Three-door cars are fitted instead with a panel of foam material. The door handles are recessed into the trim, to prevent them from causing injury in the event of a collision, and to avoid accidental opening of the door while the car is moving.

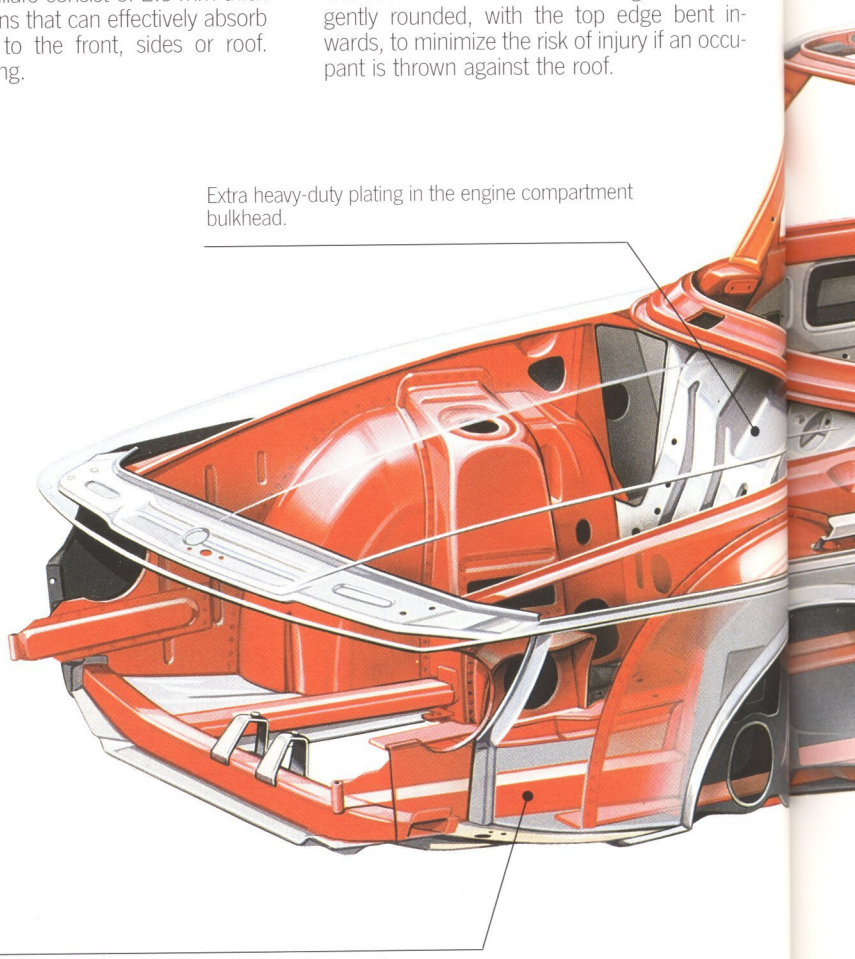
The lower part of the instrument panel is designed to prevent serious injuries to the knees, thighs and hips in an accident. The protection consists of an energy-absorbing shield of rigid polyurethane foam, covered with PVC film. Stiffening plates are molded into the foam material.



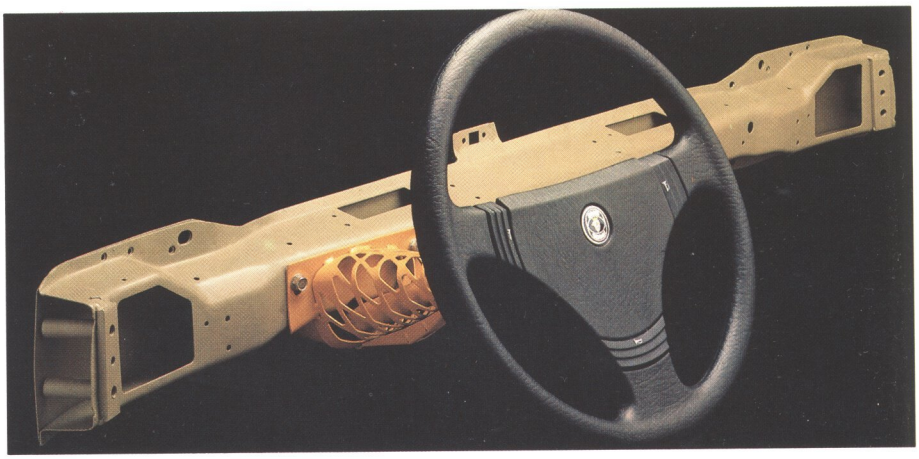
The windshield pillars consist of 2.5 mm thick sheet steel sections that can effectively absorb stresses applied to the front, sides or roof. Extra-thick padding.



The section of the roof reinforcing member is gently rounded, with the top edge bent inwards, to minimize the risk of injury if an occupant is thrown against the roof.



Energy absorbing crash members which transmit forces from a frontal collision to the wheel housings and arrest rearward movement of the engine.



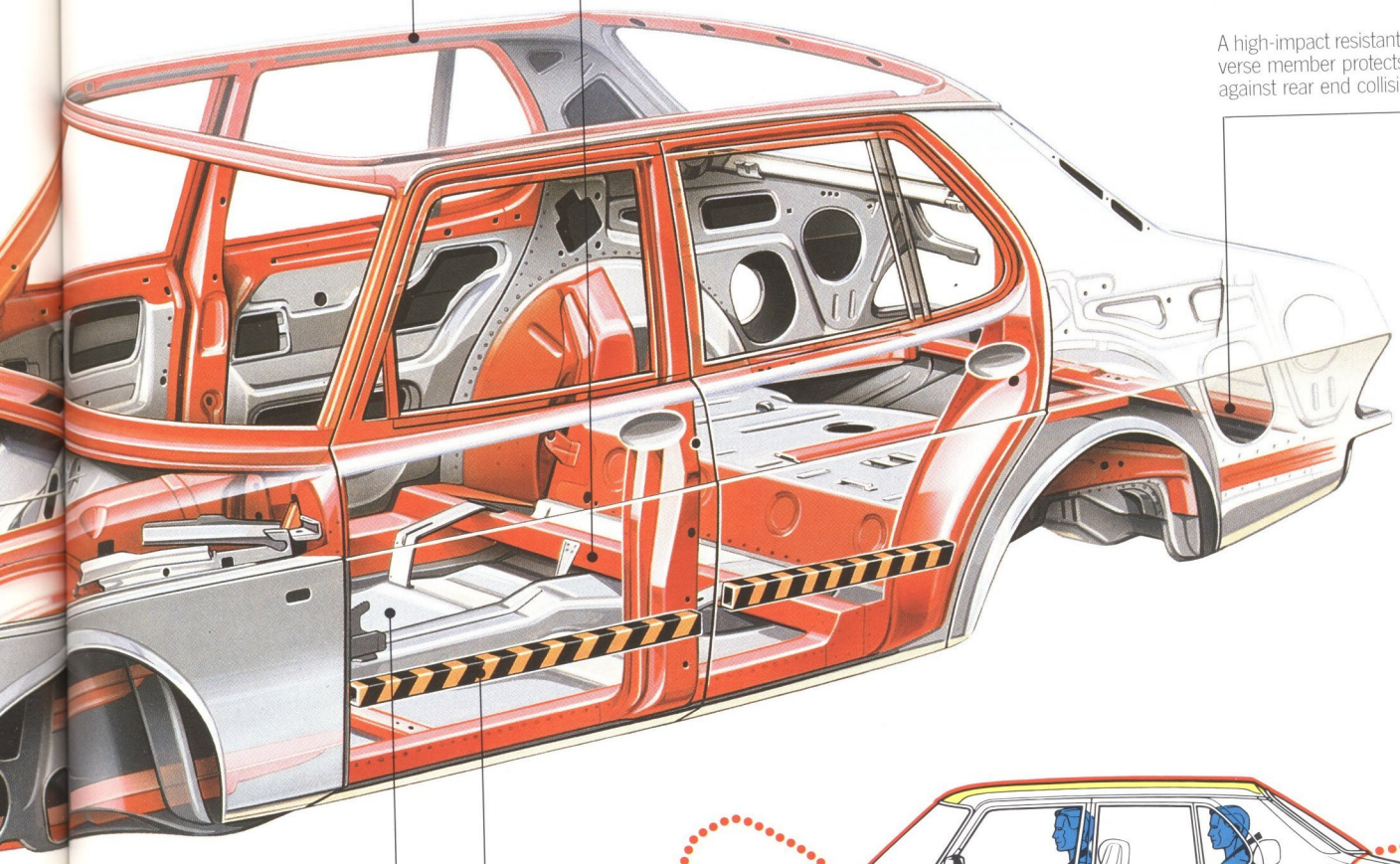
The steering column is secured to a sturdy cross-member below the instrument panel. The instrument panel is backed by a deformable sheet steel body, covered with a softer, impact-absorbing material.

The all-welded, unit construction body is light but extremely strong. The interior is surrounded by a sturdy cage of steel sections and reinforcements.

Reinforced transverse members in floor.

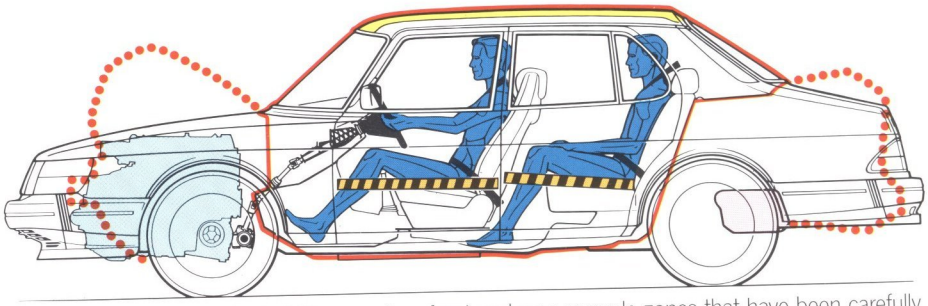
Reinforcing members around the roof.

A high-impact resistant transverse member protects against rear end collisions.



Moulded reinforcing struts in the floor pan.

Door member.



The safety body of the Saab 900 comprises front and rear crumple zones that have been carefully designed and tested to absorb collision energy as effectively as possible.

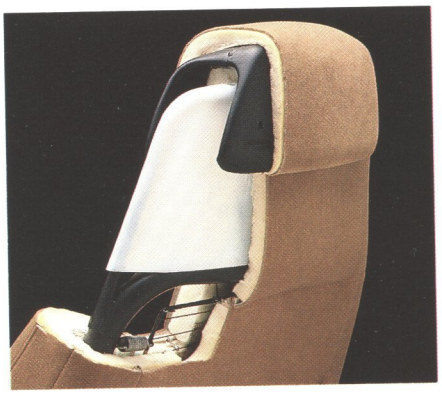
Sturdy reinforcing members are welded into the doors.

Saab cars are subjected to barrier collision tests at various angles, drop tests, skid tests and other realistic trials, to ascertain that the interior will more than just conform to specified safety standards.

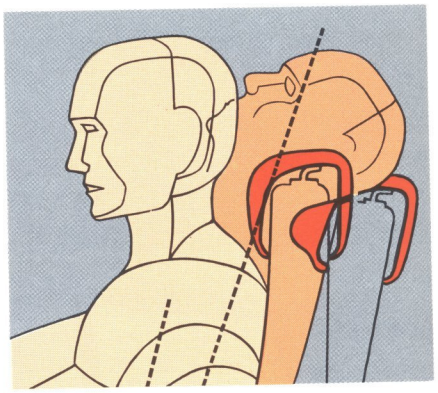
Head restraints

In a rear-end collision, the seat must effectively arrest the backward movement of the occupant's body and head. The backward tilt of the head is particularly critical, since the neck vertebrae could sustain serious injuries if the backward tilt exceeded 120°. Tall people are especially vulnerable. Saab designers have therefore based their work on the tallest specimen person—the 99th percentile. Only 1% of humans are taller.

The head restraint consists of foam material, molded around a resilient backing plate. The function of the backing plate is to arrest the neck and minimize the risk of injury to the neck vertebrae. The head restraint is most effective when it is level with the back of the head.



The front seat head restraint consists of foam material molded around a resilient backing plate.



Tests on dummies have demonstrated that the head restraint has excellent energy-absorbing properties. For best possible protection, the head restraint should be set level with the back of the head.

Seat belts

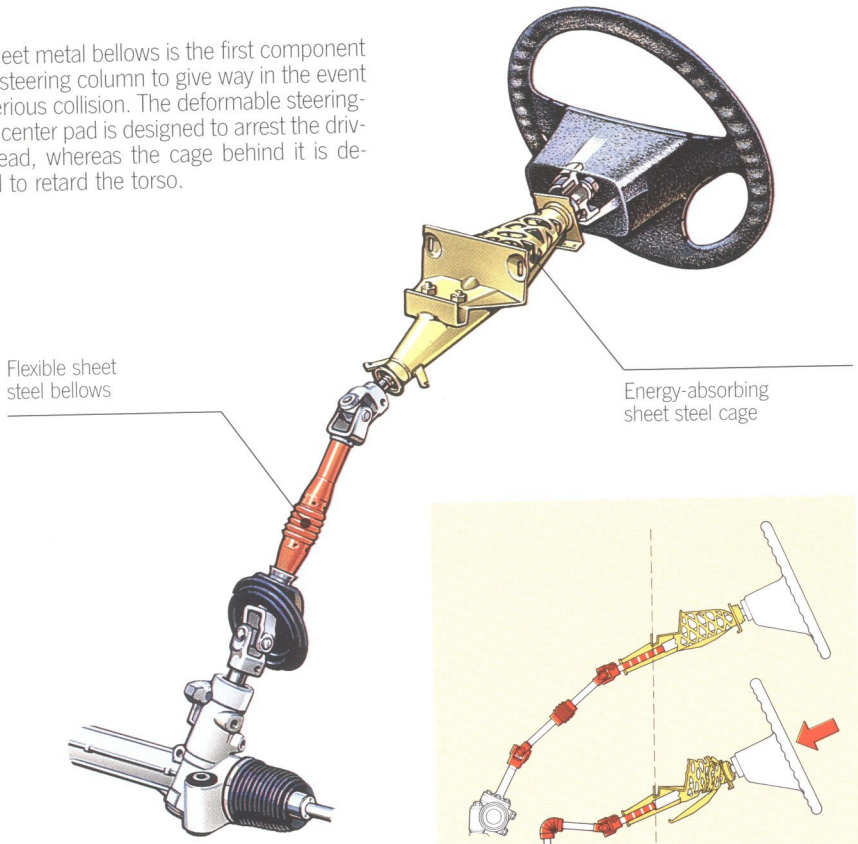
All models have three-point lap and shoulder seat belt restraints at all outboard seating positions, front and rear, except the Convertible. The 900S 3-door is equipped with motorized, automatic shoulder belts in front together with manually fastened lap belts. All five passenger models are also equipped with a lap belt in the center rear position.

Among the world's safest steering columns

The Saab 900 has one of the world's safest steering wheels and steering columns, many features of which are patented. The steering column consists of three sections, connected by universal joints. The top section is deformable and telescopic and is fitted inside a closely perforated steel cage. Below it is a patented sheet metal bellows, which will cause the steering column to collapse when subjected to a high load. The section nearest to the steering gear consists of a rigid shaft.

The steering gear is located far back in the engine bay, so the front of the car would have to deform very heavily before a collision could affect the steering column.

The sheet metal bellows is the first component of the steering column to give way in the event of a serious collision. The deformable steering-wheel center pad is designed to arrest the driver's head, whereas the cage behind it is designed to retard the torso.



The three-section steering column is equipped with flexible sheet steel bellows in the centre. The top section of the steering column is telescopic and is fitted with an energy-absorbing sheet steel cage.

Comfort and safety

Wide doors with low, recessed sills:
- Easy to get in and out of the car.
- The sill is kept free from road dirt and will not soil clothing.
- Central locking.

Interior lighting:
- Switched on automatically when a side door is opened.
- A non-dazzling map-reading lamp behind the inner rear view mirror.
- Lighting at the ignition switch.

Careful insulation of the body:
- Maximum absorption of road noise and engine sound.

The radio/tape player is accomodated in a special compartment and can be removed for safe keeping:
- All models include stereo speakers at the front and rear and an electric antenna.
- Turbo models include a graphic equalizer.

The more powerful models are equipped with hydraulic engine mountings:
- Attenuates vibrations very effectively.
- Lower the sound level in the car.
- Tuned to function in harmony with the vehicle suspension system.

A high-efficiency servo-controlled air conditioning/ventilation system:
- 13 vacuum-controlled damper vents distributing well-tempered, clean air.
- Maximum fan speed gives 3.5 cu ft (100 liters) of clean, fresh air every second.

The 900 safety body:
- Front and rear have carefully designed crumple zones to absorb collision energy as effectively as possible.
- The unitary body is light but extremely strong.
- Sturdy reinforcing members are welded into the doors.
- All materials used in the interior are fire-resistant or selfextinguishing.
- Hood incorporating buckling zone in the center and special arresters in the rear to prevent the hood from being forced through the windshield in a collision.
- Recessed door handles.

Among the world's safest steering columns:
- Gradually collapsible steering column.
- An energy-absorbing steel cage below the steering wheel.
- A large steering wheel center pad designed to arrest the drivers head.

Front seats with strong frame; protective plate in the backrest; strong mountings:
- Can withstand high stresses in a collision.
- Prevents injuries to the occupant's neck vertebrae.

Heavy padding of the interior:
- Impact-absorbing padding throughout.
- Absence of sharp edges and corners at the rear of the front seats.
- Headrests and head restraints of safe design.
- Special knee impact zone below the instrument panel.

Innovative seat belts:
- Motorized, automatic front shoulder belts on the 900S 3-door.
- Lap/shoulder belts at the rear outboard positions on all models except early production Convertibles.

Roof lining of moulded glass fiber:
- Impact-absorbing lining.
- Sound and heat insulation.

Safe, well-protected location for the fuel tank:
- The safest position—between the rear wheels.
- Reduced risk of leakage in the event of rear or side collisions.


SAAB
SAAB
900 turbo

FORM AND VERSATILITY

"...there are many who would regard the Saab as a timeless design, for whom its functional looks, engineering excellence and reputation for quality and durability hold much appeal."

(MOTOR,
Great Britain)

The obvious objective of a designer entrusted with the styling of a product is to achieve an attractive end result. A car designer is no exception. But in addition to producing an elegant body and interior, he must also take into account a wide variety of factors, many of which may appear to be incompatible.

Form and function

Since a family car must primarily be comfortable, practical and safe, its lines and appearance are largely governed by these requirements. At the same time, the car should be styled so that it has its own unmistakable identity.

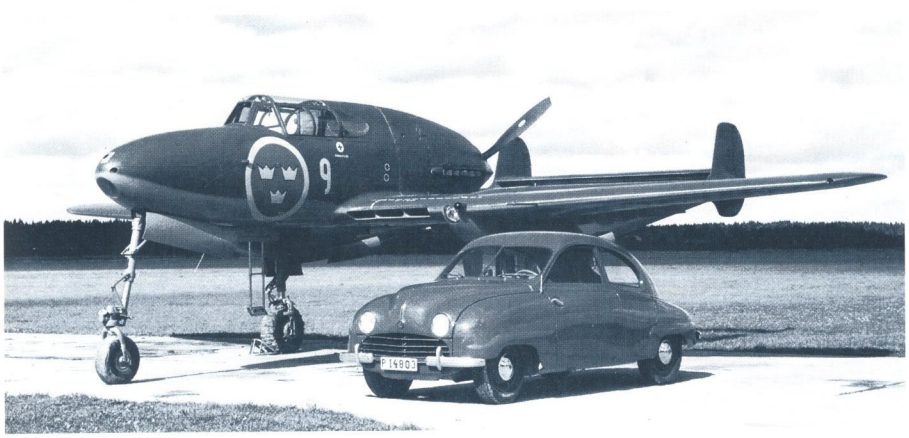
The styling of Saab cars has always been based on functional considerations—in everything from the design and location of a switch to the design of the car as a whole. And when guided by functional requirements, the design of a car will usually survive the frequent changes in automotive fashions.

The car that took shape during the mid-1940s was later christened the Saab 92. The demand specification was briefly as follows:

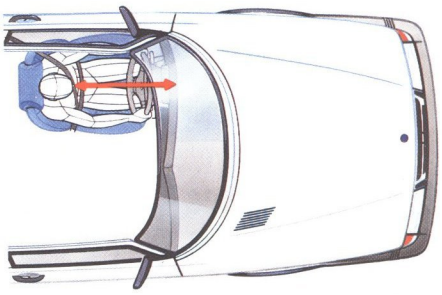
- it was to have good aerodynamic lines. Recent wind-tunnel tests have shown that its coefficient of drag was 0.30—an extremely low value, even compared to most advanced cars produced today;
- it was to be lightweight, so that it would be economical to run;
- it was to have front wheel drive, with the engine at the front for good roadholding;
- it was to be safe for the occupants to travel in.

The very first Saab model proved to offer excellent grounds for further development and refinement. It was correctly conceived right from the start. The last direct descendant of the 1950 Saab 92 was the 1980 model of the Saab 96. Thus the basic design survived for a period of 30 years—something of a phenomenon in the automotive world. But much of the fundamental design philosophy has naturally been inherited by Saab's latest models.

Right from the early days, Saab has always placed great emphasis on designing its cars for good aerodynamics and optimum efficiency, albeit without endeavoring to achieve the lowest possible drag coefficient, as is currently fashionable with some other car manufacturers. Good aerodynamics must also be

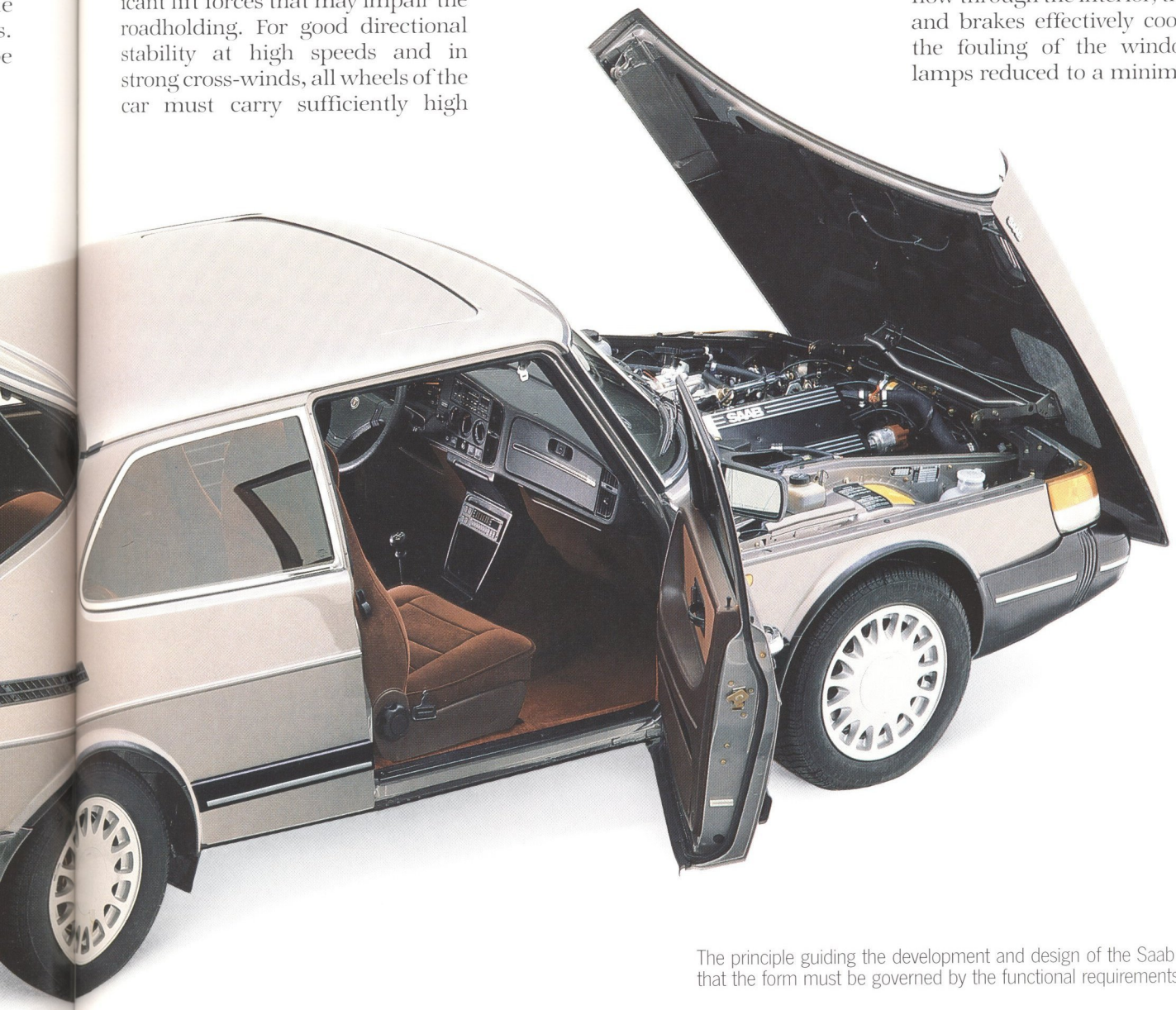


The automotive history of Saab began at the end of the Second World War. Svenska Aeroplan AB (SAAB) started looking around for an alternative and a supplement to its production of military aircraft. The choice fell on a more "down to earth" means of transportation—the car.



The curved windshield is laminated (High Impact) and is located far forward of the front-seat occupants. The large distance reduces the risk of the occupants being thrown against the windshield in a collision.

considered to achieve good road behavior and firm directional stability, especially in blustery cross-winds. At high speeds, the flow of air over the car, even one with a low drag factor, may give rise to significant lift forces that may impair the roadholding. For good directional stability at high speeds and in strong cross-winds, all wheels of the car must carry sufficiently high loads. Aerodynamic behavior is thus "double-edged"—a Formula I car, for instance, has superb roadholding and grip, but at the expense of relatively high drag. So a car designer must endeavour to strike the best balance between drag and lift. He must also ensure that the car will be aerodynamically functional, with the ventilation air inlet and exhaust located for best possible air flow through the interior, the engine and brakes effectively cooled, and the fouling of the windows and lamps reduced to a minimum.



The principle guiding the development and design of the Saab 900 line is that the form must be governed by the functional requirements.

Drag

Drag (air resistance) has an appreciable effect on fuel consumption. Moreover, the effect increases with the speed of the car. If speed is doubled, drag will increase four-fold and if speed is tripled, it will increase nine-fold. So the increase is quadratic ($2^2=4$, $3^2=9$, $4^2=16$, etc.)

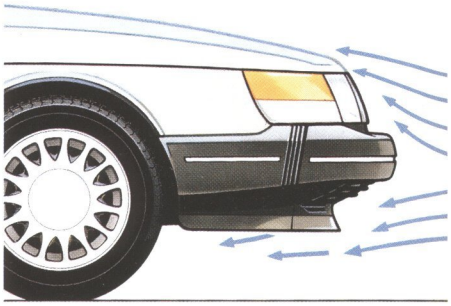
The power necessary to overcome drag increases even faster with increasing speed. Instead of quadratically, the power increases as the cube of the speed ($2^3=8$, $3^3=27$, $4^3=64$, etc.). If the power to overcome drag is 0.7 hp at 30 km/h (19 mph), it will soar to 45 hp at 120 km/h (75 mph), since $0.7 \times 4^3=45$.

The drag coefficient C_d can be regarded as a quality factor for the shape of the car body. The value of C_d is relatively independent of the size of the body, and is between 0.30 and 0.50 on modern cars. The lower the drag coefficient, the more favorable the airflow over the body.

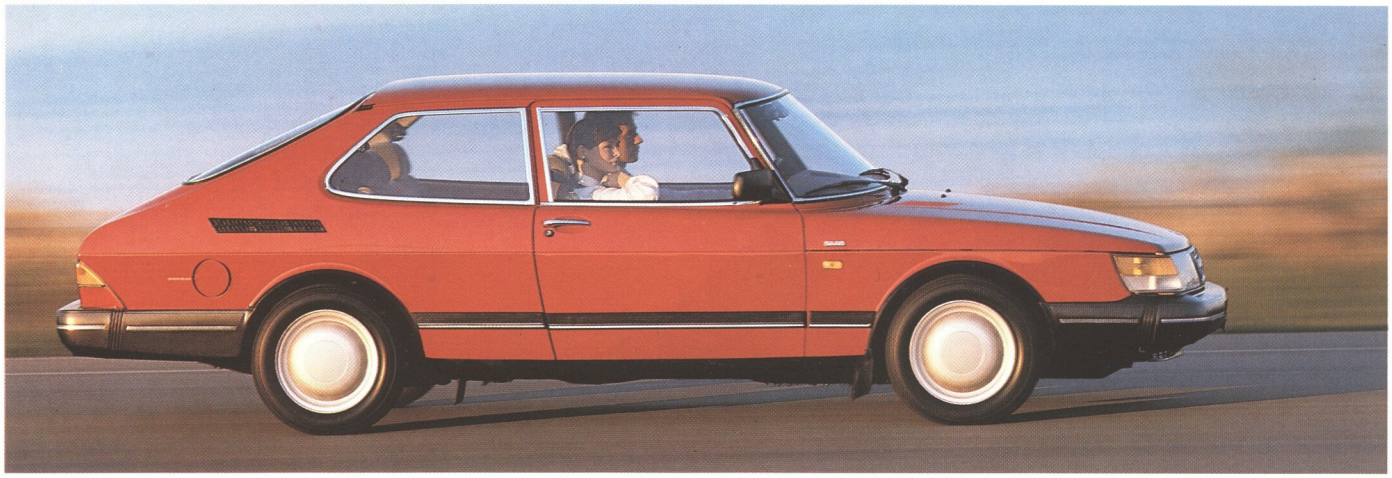
But C_d cannot be used for comparing the total drag of different cars, since the frontal area of a car is as important as the C_d coefficient, and since the values of C_d specified by different manufacturers are seldom directly comparable. The C_d coefficient is measured in a wind tunnel, and different wind tunnels produce different values on a given car. In addition, it is often unknown whether the coefficient applies to the bare body shell or to a car with its ordinary cooling air intakes, rear-view mirrors, mud flaps, exhaust system, etc. The difference may be up to 25%.

Even elements such as aerodynamic headlights and integrated wrap-around bumper assemblies will have an affect on the C_d. On the Saab 900 drag is also low in the transverse direction, which is clearly noticeable when the car is travelling in blustery cross-winds.

All of the 900 models are equipped with a front spoiler, and the Turbo and Turbo SPG models are fitted with larger designs, both of which reduce fuel consumption.



The front spoiler contributes to low drag and good directional stability.



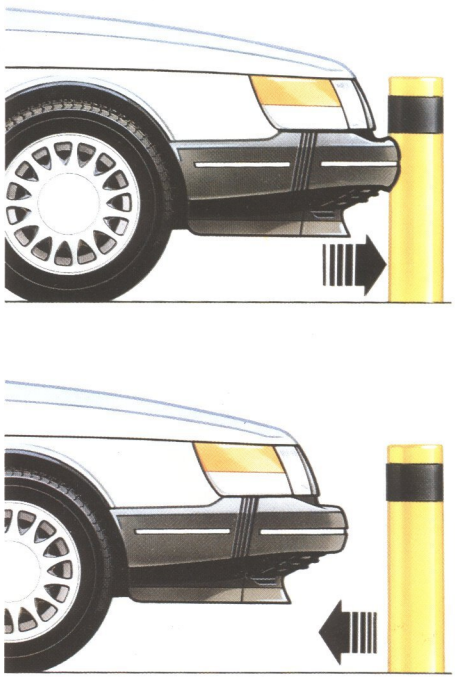
The low, plain front with smoothly rounded corners, the curved windshield and the relatively smooth underside also contribute to the relatively low drag of the car.

Due to their very high performance, all Turbo models are also fitted with a rear spoiler, to ensure good directional stability at very high road speeds.

Bumpers

The Saab bumper is self-restoring—it will revert to its original shape and performance after minor impact.

The 900 models "dive" very little on braking, and the vertical dimension of the bumper is large. So the Saab bumper provides effective protection for the body in the event of minor collisions in traffic jams, when parking, etc. The design is tested to withstand impacts at up to 5 mph with smooth, fixed objects without the need for subsequent repair, even though U.S. standards require a bumper to withstand impacts at only 2.5 mph.



After a minor impact the bumper resumes its original shape.

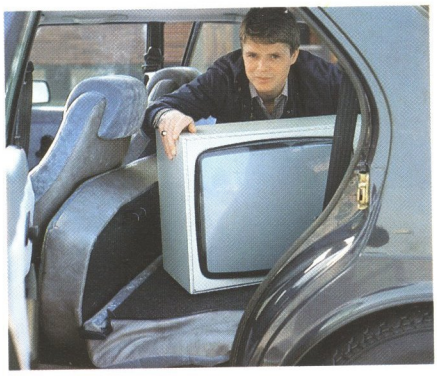
Most people need a car that will take them comfortably from one place to another. But they often need to transport large objects as well. And for that a car which performs solely as a "passenger carrier" just won't do.

Tailored to your needs

The Saab 900 has one of the largest luggage-carrying capacities on the market—21.2 cu. ft (602 dm^3) in the Hatchback model and 21.8 cu. ft (617 dm^3) in the 4-door model. The corresponding values according to SAE standards are 14.9 cu. ft (421 dm^3) and 14.4 cu. ft (408 dm^3), respectively.

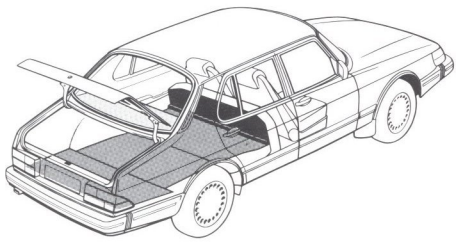
But the capacity can be more than doubled in a matter of seconds, entirely without tools. When the back seat is folded down, the cargo bay has a capacity of no less than 56.5 cu ft (1600 dm^3) or 53 cu ft (1500 dm^3) on the 4-door model. The deep cargo bay is also accessible from the side doors, which facilitates loading.

A well-protected lamp lights up the luggage compartment when the tailgate (or the trunk lid) is opened. The floor is completely flat and is covered with a tough, synthetic fiber carpet. The sides are lined with heavy-duty, molded carpet, which also covers the wheel housings. The material is sound-absorbing and will protect delicate luggage. The interior of the luggage compartment is dark grey.

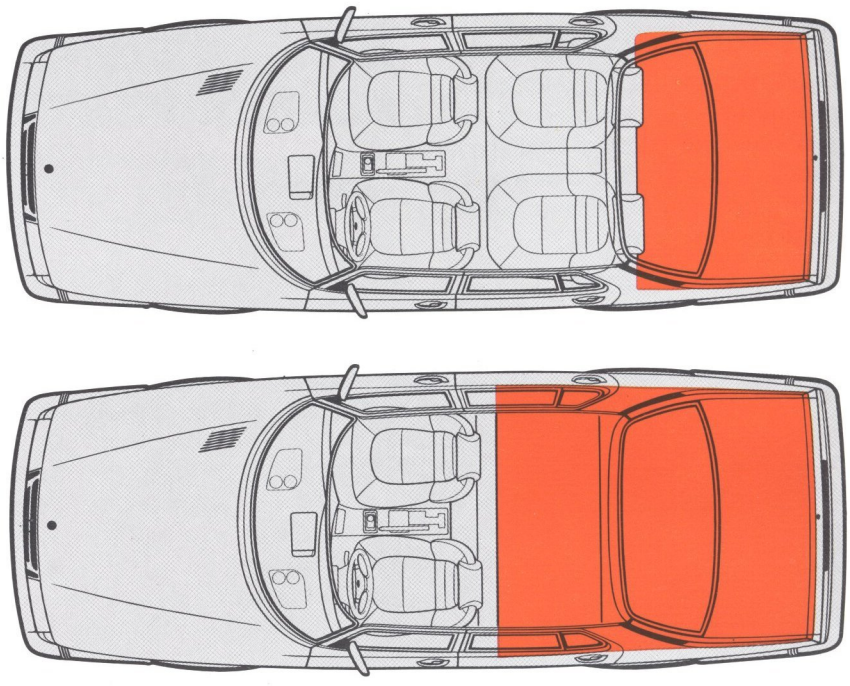


In a matter of seconds and without tools the luggage compartment capacity can be more than doubled.

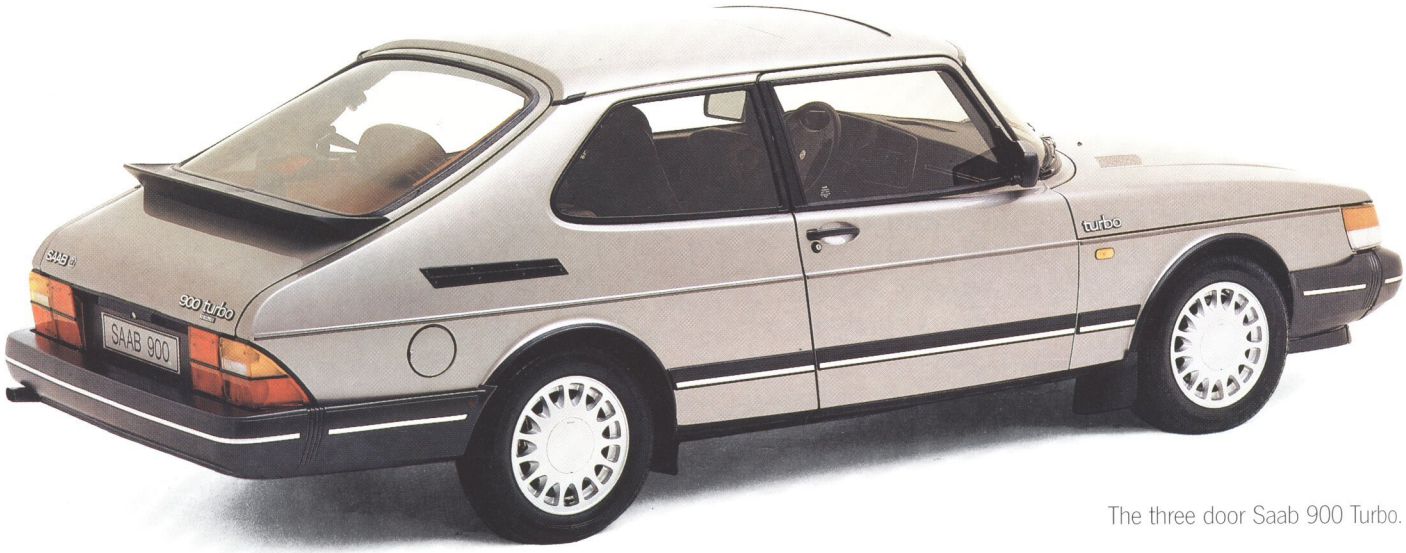
The space under the hatch in the floor is designed to accommodate the spare wheel, jack and tools. But it can also serve as a concealed storage space for valuables or additional accessory items.



The ordinary luggage compartment in 4-door models has a capacity of 21.8 cu.ft. Folding down the rear seat expands the available load capacity to 53.0 cu.ft.



A practical feature that the Saab 900 4-door shares with the Hatchback model is the expandable trunk—a feature that few other sedans can match.



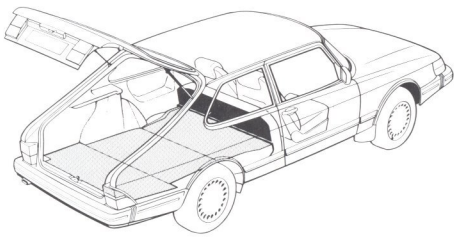
The three door Saab 900 Turbo.

The Hatchback concept

The large tailgate of the Hatchback models makes it easy to load even heavy and bulky items. As soon as the tailgate has been raised to the horizontal position, two gas struts will take over and open it fully. The tailgate opening is 31.5 inches (80 cm) high and just over 40 inches (1 meter) wide. Since the luggage compartment has no rear sill, the height of lift for loading is no more than 20 inches (50 cm). The parcel shelf of the hatchback models can be locked in the raised position by means of a spring-loaded latch to facilitate loading. The parcel shelf can also be removed entirely if the full interior height is required for loading.

The space under the hatch at the extreme rear of the luggage compartment floor is designed to accommodate the spare wheel, jack and tools, as well as serve as a storage compartment for various additional accessory items.

The back seat can be folded down quickly and simply to convert the ordinary luggage compartment into a vast, easily accessible cargo bay with a completely flat floor.



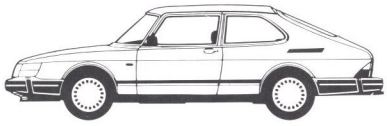
The ordinary luggage compartment of a Hatchback has a capacity of no less than 14.9 cu. ft SAE (421 dm^3), which can be expanded to a vast cargo bay with a volume of 56.5 cu. ft (1600 dm^3) by folding down the back seat.

The Saab 900 line is built to combine motoring pleasure with the best possible utility. It includes models in several performance classes and with different types of bodies, to enable you to best suit your needs.

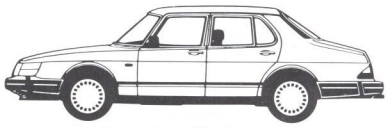
The most practical body type is the three-door Hatchback. The third door is a roof-to-bumper tailgate, fitted with gas struts that make it easy to open, in spite of its size. Whenever you need extra load-carrying capacity, you can fold down the back seat to convert the luggage compartment into a vast cargo area. Even if you choose the four door Sedan model you will still have the option of folding down the back seat to expand the luggage-carrying area.

To crown the Saab 900 range, we produce a very limited edition of a special model for the true connoisseur—the Saab 900 Convertible.

Low height of lift and a flat floor make it easy to load and unload the Saab 900.



Three door Hatchback.



Four door Sedan.

The four door Saab 900S.

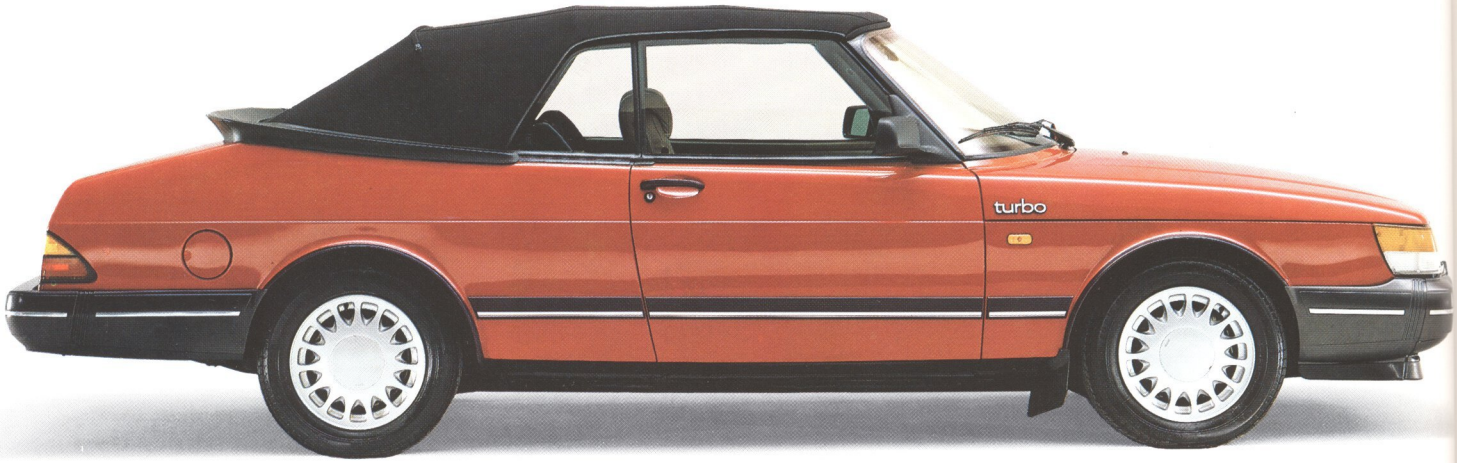
Owning and driving a convertible is a privilege enjoyed only by the select few—even though it's almost every motorist's dream.

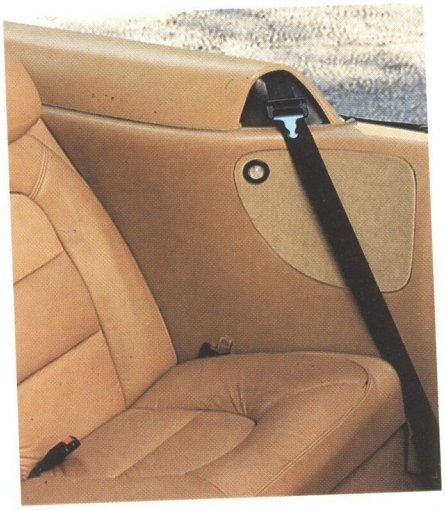
Convertible

The Saab 900 Convertible is an open car in the classical sense. The fully lined "Cambria cloth" top drops neatly into its own storage compartment between the trunk lid and the back seat, without restricting rearward vision. A three-section cover snaps into place to protect the top after it has been opened. The side windows can be lowered fully to emphasize the sensation of "openness".

If the weather should suddenly change, the top can be raised electrically at the touch of a button. After it has been locked in position with two latches at the front, the top provides the same weather-tight protection as the roof of an ordinary sedan.

Even when the top is down, the interior conveys an impression of all-encompassing security. The back seat is comfortably contoured and is fitted with headrests for two passengers. Leather upholstery is fitted as standard equipment, which gives the interior a luxurious feel and smell. An anti-theft alarm system is standard.





Courtesy lights are provided on both sides of the back seat. A map-reading lamp is incorporated into the rear-view mirror mounting, and the ignition lock is illuminated. The front seat-belt anchorages are located high up, to provide a comfortable strap angle across the occupant's body.

When the top has been folded down, its storage compartment is protected by a cover which provides an elegant transition between the interior and the body.

Controls are provided on the center console for raising and lowering the windows. For true sensation, the side windows retract into the side of the body. Although the electrically heated glass rear window may be lowered by itself for increased ventilation, it need not be unzipped to lower the top.

Form and versatility

Aerodynamic lines of the body:
– Curved windshield and a low smooth front with gently round corners contributes to the relatively low air resistance and low fuel consumption.
– Good directional stability and low wind noise at very high road speeds.

Spoilers:
– Improves the directional stability at extremely high speeds.
– Protects against stone chips.

Wide, forward-opening hood:
– Easy access to the engine compartment for service work.
– Reduced risk of damaging the paintwork.

Ventilated chassis members, smooth underside of the body and high-level welds:
– Corrosion-resistant design.
– Lower repair and maintenance costs.
– Long useful life and high re-sale value.

Self-restoring bumpers:
– Protect against damage in most impacts up to 5 mph.

Lightweight, spacious body:
– Low curb weight reduces fuel consumption.
– Provides good interior room for occupants as well as cargo.

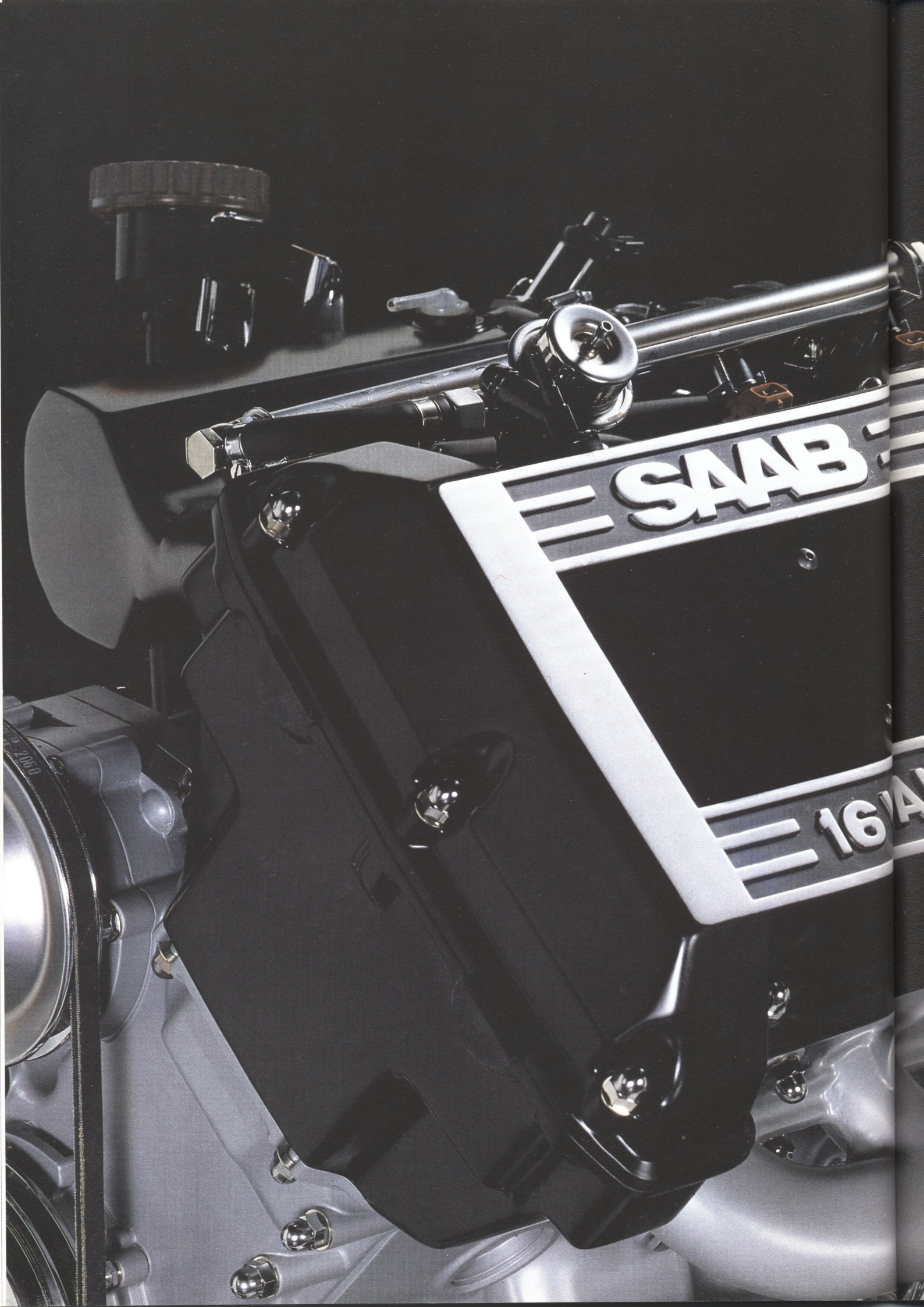
Large capacity of the ordinary luggage compartment:
– Ample space for luggage.
– Capacity of 14.4 cu ft (4-door), 14.9 cu ft (Hatchback), 9.8 cu ft (Convertible).
– Simple loading—low height of the luggage compartment floor.

The parcel shelf is removable:
– Provides extra height in the ordinary luggage compartment (Hatchback model).

Expandable luggage compartment (except Convertible):
– Quick and simple conversion.
– Flat luggage floor and low sill.
– Capacity 52.1 cu ft (4-door), 56.5 cu ft (Hatchback).

Practical storage inside the car:
– The front doors are equipped with pockets, which are extra spacious on the three door model.
– Lockable glove compartment with non-dazzling light.
– A front center console with storage compartment and room for extra equipment.
– Pockets in front seat backs (900S and Turbo models).

Concealed storage space under the floor:
– Storage space for the spare wheel, tools, tow rope, etc.
– Also serves as a concealed storage space for valuables.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16


QUALITY
"...a very high standard of build quality and generous equipment levels."
(MOTOR, Great Britain)
VALVE

The foundations of quality are laid at the project design stage, when the car is barely more than an outline. Defects, rust and unnecessary wear are eliminated by systematic selection of design and production features that ensure the best possible reliability.

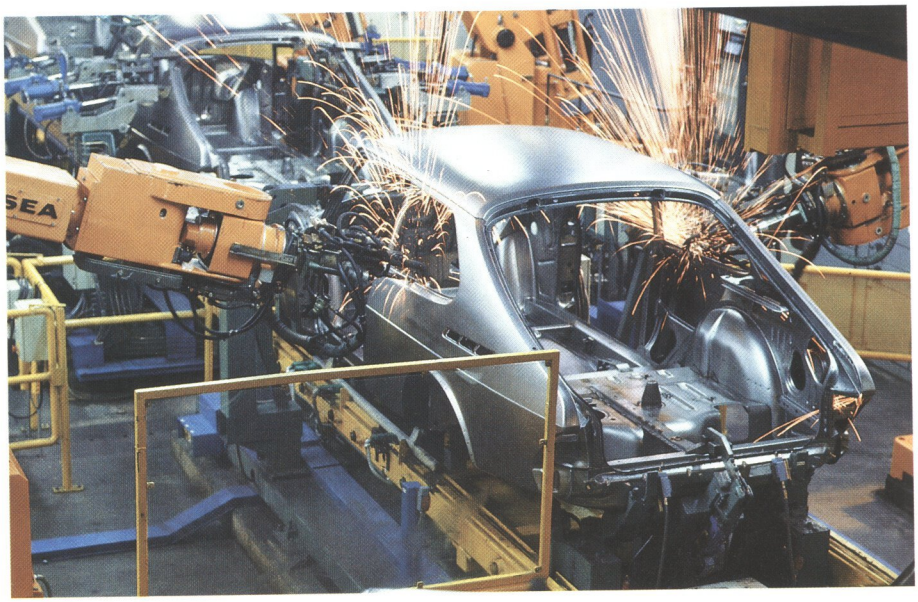
Design and production

Exacting quality demands have been met by structuring the entire production of the Saab 900 to achieve optimum quality. This extends all the way from the computer programs written for the assembly work, right up to the final quality inspection.

The Saab 900 is assembled by autonomous groups of operators. Each group works on a short production line, and its members are responsible not only for the assembly but also for the inspection of their own work. We apply the zero fault principle, whereby no car or component is allowed to leave the area of the operator group before it has been inspected and approved.

High functional quality is achieved by large units being assembled and tested before they are fitted into the car. The entire instrument panel, for instance, together with the wiring harnesses, ventilation system and all components, is assembled and tested before it is fitted into the car.

A high degree of automation ensures a high and uniform standard of quality. We use robots primarily for monotonous and potentially hazardous processes.



Relying on robots to do the welding guarantees consistently high precision in the assembly of the body. But a great deal of human craftmanship also goes into producing the Saab 900.

During production all cars pass through an exhaustive quality control program. Here the thickness of the paint finish is being checked.

By assembling and testing large units before they are fitted into the car, we can achieve much higher quality.

Rustproofing

The Saab 900 is designed to resist corrosion. The body is smooth and has virtually no sharp corners. The sill members are ventilated to the inside of the car. The doors are provided with drain holes. The underbody has no rust traps. The front wheel housings are ventilated and are completely separate from the fenders and hood, and have no cavities that could collect dirt and moisture—neither on the wheel side nor the engine side.

The design of the Saab 900 is quoted as exemplary by the Swedish vehicle-inspection authority, which has considerable expertise on the corrosion of road vehicles.

Welded joints are located above the lowest point of every component—the point at which water may possibly collect. The greater the number of spot welds, the sturdier the body. But their size, quality and location are even more important than their number. Saab employs exceptionally advanced electronic measuring equipment for checking the quality of welded joints.

Automatic welding machines and robots are widely used for body assembly and painting, to guarantee high and uniform quality.

Surface treatment

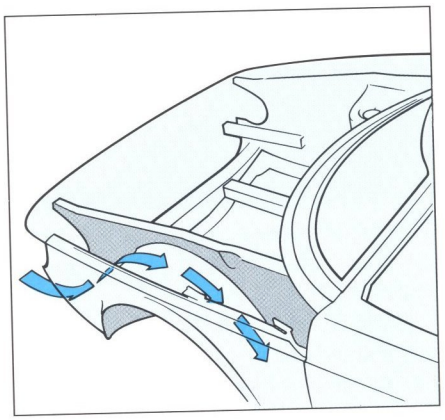
The unique surface treatments as developed and applied by Saab to all its products, contribute to excellent all round rust protection properties, especially in the case of light surface damage caused by chips from stones and gravel.

The entire process taken step-by-step is as follows:

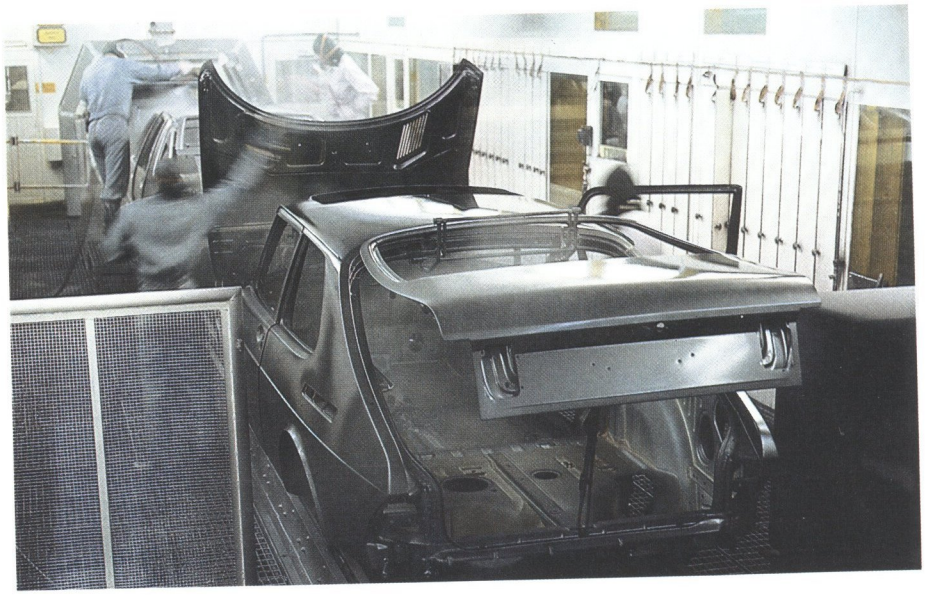
Alkaline degreasing and zinc phosphatising is carried out by high pressure spraying in nine stages. This provides a certain amount of basic protection and a good surface for the primer to adhere to. The outside of the body is then sprayed with a modified epoxy primer to reduce the risk of corrosion spreading around any damaged area of the paintwork.

Since all internal surfaces and cavities as well as the exterior must be protected, the body is immersed in a bath of anti-corrosion paint. A strong electric current causes the paint particles to adhere firmly to

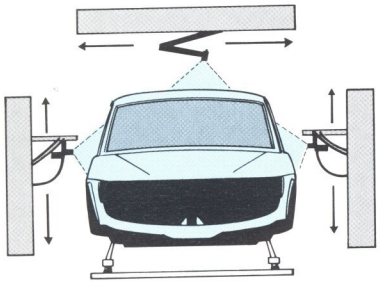
The foundations of durability are laid when the car is no more than a design study. The body of the Saab 900, for instance, has large, smooth surfaces without sharp corners, and the few unavoidable welded joints are located high up, where they are well protected from moisture. The sill members are ventilated towards the interior, and the doors are provided with drain holes. The underside of the body has virtually no pockets in which dirt and moisture can gain a foothold.



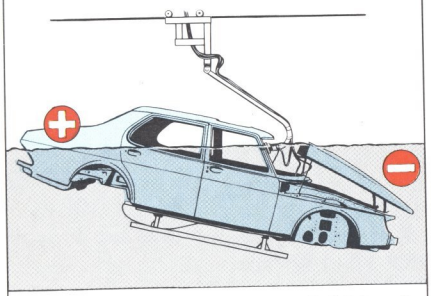
The front wheel housings are ventilated.



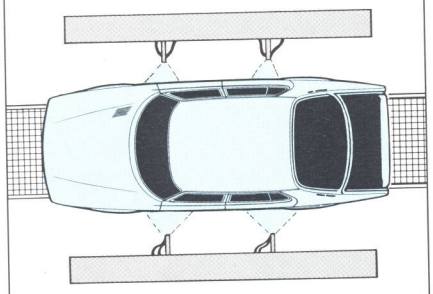
Two coats are applied for metallic finishes. The first coat is thin and has a high pigment content. The last coat is a thick layer of clear varnish which protects the pigment and produces a very high gloss.



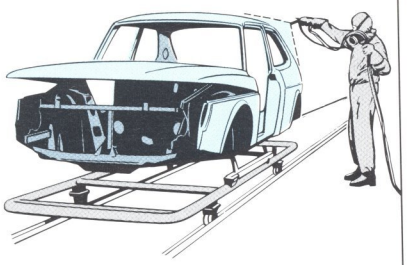
The outside of the body is sprayed with a modified epoxy primer to reduce the risk of corrosion spreading around any damaged area of the paintwork.



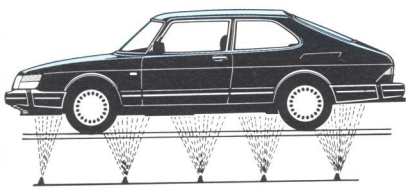
To ensure the complete coating of all internal surfaces and cavities, the body is immersed in an electrolytic bath of anti-corrosion paint.



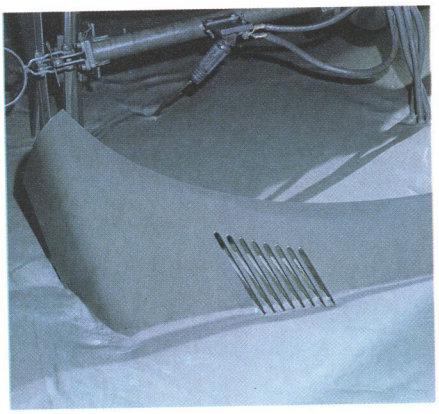
The hood and the surfaces below the mid-line of the body are sprayed with a thin coat of a polyester-based paint which provides extra protection against stone damage.



Before this polyester paint has dried, the entire body is sprayed with an intermediate coat of modified epoxy paint.



The underside of the floor pan is sprayed with an anti-corrosion agent.



The electrophoresis method produces a continuous coat of paint of uniform thickness—even in corners and around edges.

All joints are sealed with a PVC sealing compound which prevents moisture seepage.

all internal sheet metal surfaces. Long electrodes are inserted into the sill members to ensure the paint penetrates even here. The method produces a continuous coat of paint of uniform thickness—even in corners and around edges.

All joints are sealed with a PVC sealing compound to prevent moisture seepage. A polyurethane compound is sprayed at high pressure on to the underbody, wheel housings and below the rear wheel housing trim sections. The final result is a homogeneous, blisterfree film, which minimizes the risk of flaking. Subsequent oven curing produces a tough surface that is exceptionally resistant to abrasion.

This is followed by a thin coat of polyester-based paint sprayed on the hood and below the mid-line of the body, to provide extra protection from chips in the finish caused by stones. Before the layer of polyester paint has dried, the entire body is sprayed with an intermediate coat of modified epoxy paint. The door sills are painted in an anthracite grey trim lacquer. The polyester paint, intermediate coat, trim paint and underbody compound are then baked on in an oven to give an optimal base for the final top coats.

The intermediate coat is now rubbed down wet and the top coat is applied and oven cured. Two coats of metallic finish are then applied: first a thin coat with a high pigment content, then a thick layer of clear varnish to protect the pigment and give a very high gloss.

An anti-corrosion agent is sprayed into the more than 50 cavities and joints in the body. The body is then heated, ensuring that the agent seeps into all joints. All parts which have been mounted on the underside of the floor pan after earlier anti-corrosion measures are sprayed.

A special wax is applied to all components in the engine bay to provide protection against moisture and corrosion.

"But building cars to last deserves praise and Saab certainly deserves praise for the way our particular 900 has lasted its exceptionally arduous 100,000-mile course."

(WHAT CAR?, Great Britain)

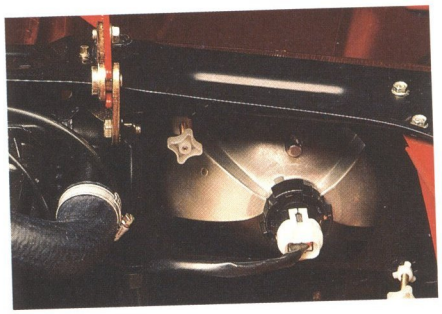
Over the years, Saab has introduced a host of new and unconventional design features and equipment. Many of these have become pioneering innovations in automotive engineering.

Practical characteristics

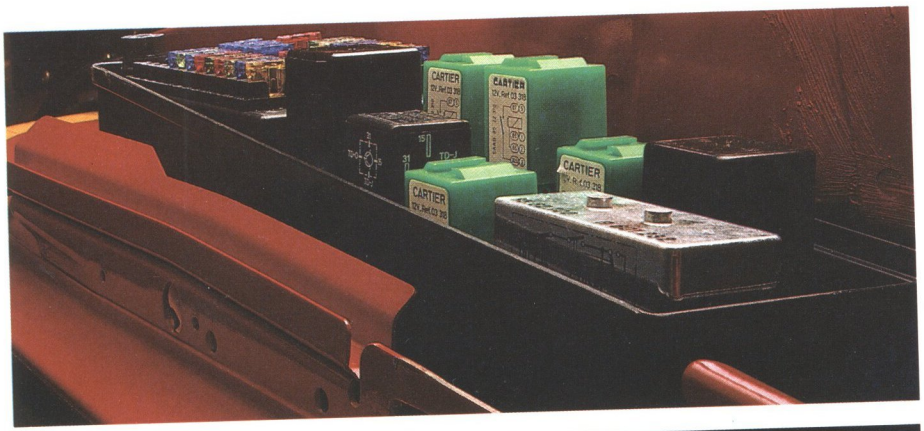
Since the hood opens forward and is pressed integrally with the tops of the fenders, the engine bay is easily accessible for service and inspection. The risk of damage to the paintwork is also reduced.

The expansion tank for the engine coolant is fitted on the left-hand side of the engine compartment. The tank is transparent, to enable the coolant level to be checked at a glance. The dipsticks for the engine and gearbox oil level are easily accessible and arranged to help prevent soiling of the hands and clothes when checking the oil level.

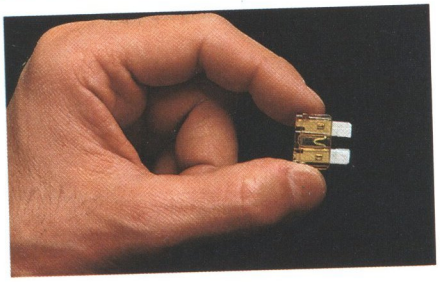
The engine compartment is easily accessible for service and inspection.

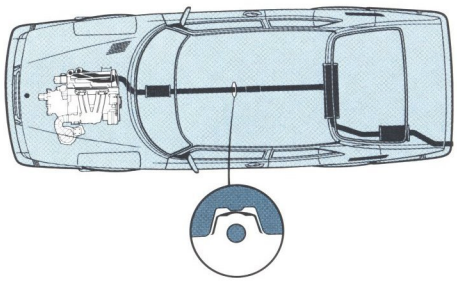


The headlamps can easily be adjusted from the inside by means of two knobs—no tools are necessary.



The fuse box is designed to accommodate 10 relays and 31 fuses, plus 7 spare fuses in separate holders.





The exhaust system runs in a tunnel in the floor pan, which protects it from damage when the car is travelling on a rough road surface.

At Saab we do not believe that performance alone is enough. Saab cars were created to bridge the gap between man and machine and provide a complete driving experience.

Reliability and driving pleasure

With the Saab 900 you'll find the uniqueness that is specially Saab, wherever you look. Move into the driver's seat and you'll immediately see what we mean—the entire car is designed around you. It puts you, the driver, at the center of things and always in complete control of events.

The way a Saab handles not only gives a full measure of active safety, but it is also an inspiration to a dynamic driving style. At the same time, you can rest assured in the knowledge that a Saab will perform predictably, smoothly, reliably. There are no unpleasant surprises.

The Saab 900's flexibility is something one comes to respect, every time you need to move large and bulky items. It's yet another factor which makes owning a Saab 900 a lesson in values.

The Saab 900 was designed for the Scandinavian climate. It's a harsh environment, making high demands on roadholding and anti-corrosion protection, not to mention heating and ventilation systems.

Every Saab 900 is the sum total of an unusual combination of many characteristics, which together make owning a car more enjoyable. And much simpler.

The Saab 900 has a robust, reliable basic construction which holds its promise of reliability and long life.

"Seldom is such a sporty car so comfortable. And seldom is such performance combined with such good running economy."

(VI BILÄGARE, Sweden)

Quality as a total concept

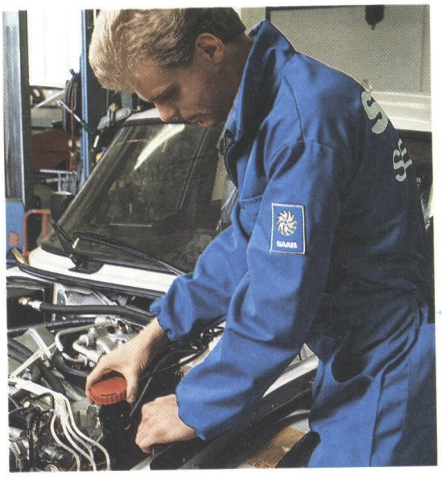
Saab quality isn't something you'll find in a few individual details. It isn't something achieved simply by putting the car through a series of tests. It's a total concept covering every part of a Saab and is designed to give every Saab owner the best possible handling, the greatest flexibility, the surest safety and the longest, most reliable lifetime.

Every Saab employee is concerned with quality. It's something that permeates the entire manufacturing process, from construction to choice of material, from suppliers to construction methods, through the actual production on to delivery and after-sales service.

Whether large or small, all components bear the hallmark of high quality that will remain unmarred even after many years and thousands of miles. Careful selection of materials and knowledgeable personnel are important elements in ensuring consistent and persistent quality.

"The Saab is possessed of a number of excellent qualities—good performance and overall dynamic behaviour, commendable comfort for driver and passengers and good load carrying capacity..."

(AUTOCAR, Great Britain)



Highly qualified, Saab-trained service personnel is an important link in this chain, as is an extensive network of service facilities and an effective, responsive system for spare parts supplies.

Every car supplied by a Saab dealer goes through a thorough pre-delivery service before being handed over to the customer.

Quality

Very high design quality:
– High reliability.
– Long useful life.
– Minimised future service and repair costs.

Quality-structured production:
– Quality is our priority throughout the production process.
– Autonomous working groups are responsible for the quality of their own work.
– The "zero fault principle" is applied—all components are inspected and approved before leaving the work area.

High degree of automation:
– Robots carry out monotonous and hazardous tasks.
– High and uniform quality.

Pre-assembled units:
– High functional quality.
– High reliability.
– Pre-tested units.
– Simplified service.

Highly developed rustproofing:
– Resistance to corrosion is built up in several stages in production.
– Minimizes future service and repair costs.

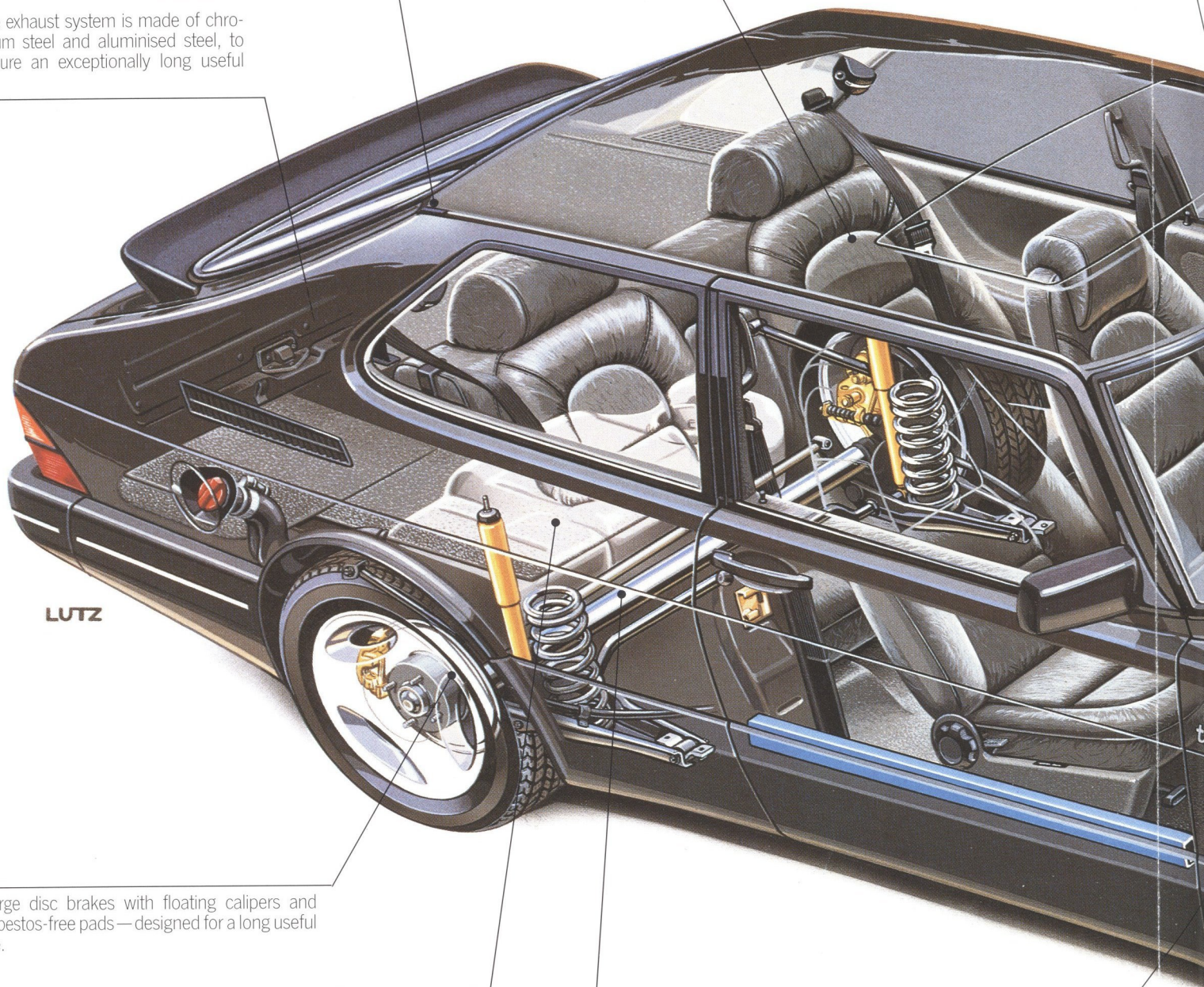
The cutaway illustration on pages 85–86 shows the Saab 900 Turbo SPG.

The back seat cushions are made by Sweden's leading manufacturer of exclusive armchairs.

Reliable, servo-actuated air conditioning/ventilation system.

Most of the spot welds in the body are welded by robots, which ensure consistently high quality, uniformity and strength of the finished body.

The exhaust system is made of chromium steel and aluminised steel, to ensure an exceptionally long useful life.



Large disc brakes with floating calipers and asbestos-free pads—designed for a long useful life.

The fuel tank is in a protected location between the rear wheels. It is made of very strong and tough polyethylene, before it is mounted in the car.

The method used for painting the body has been developed by Saab, to provide exceptionally good protection against corrosion spreading under the paint due to local damage to the paintwork.

Very sturdy rear axle assembly, with few moving parts.

Resistance to corrosion is built up in several stages in production—when the body components are welded together, before and during the painting process, and after the car has been assembled.

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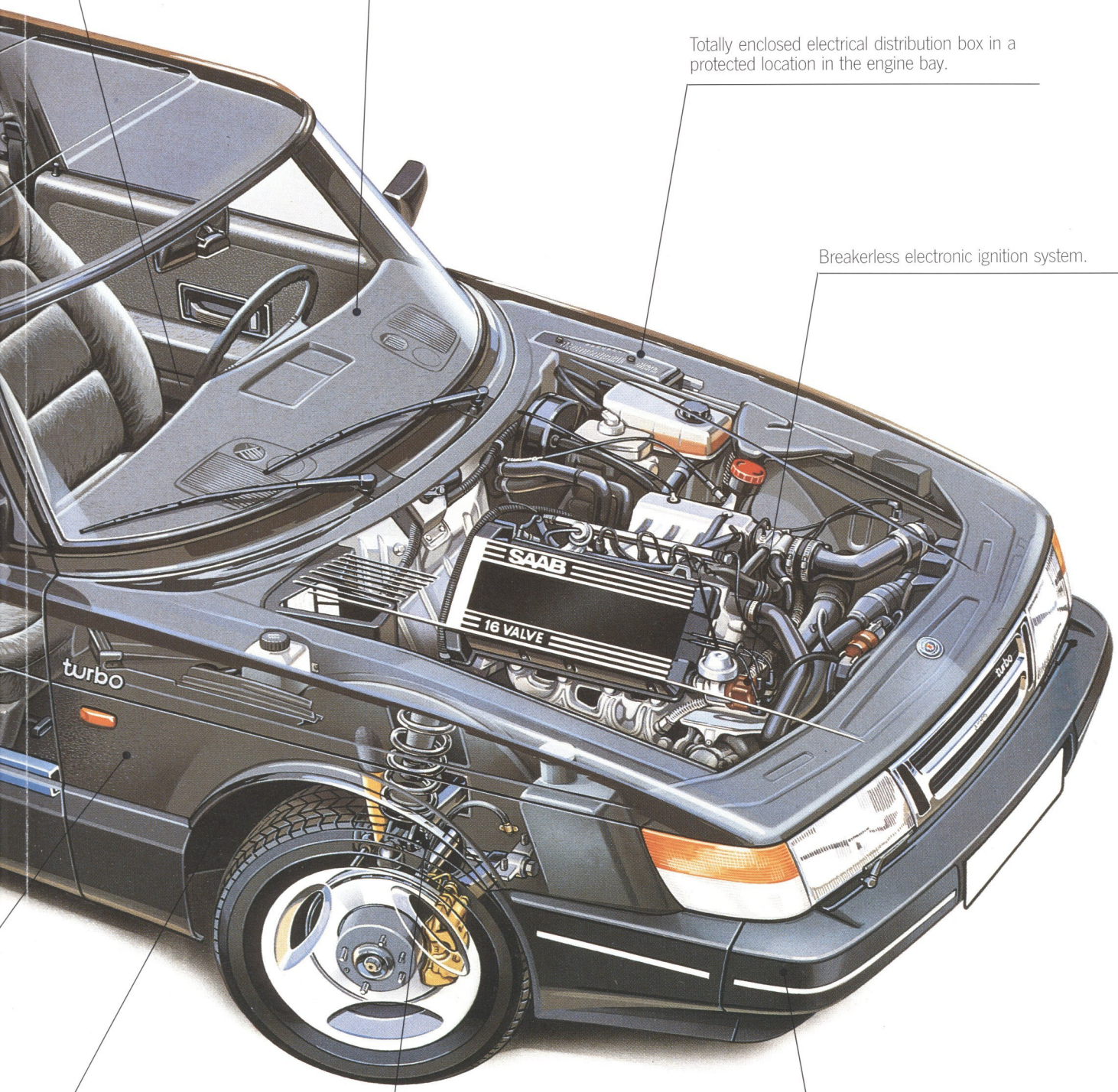
The facia unit is assembled and inspected before it is mounted in the car.

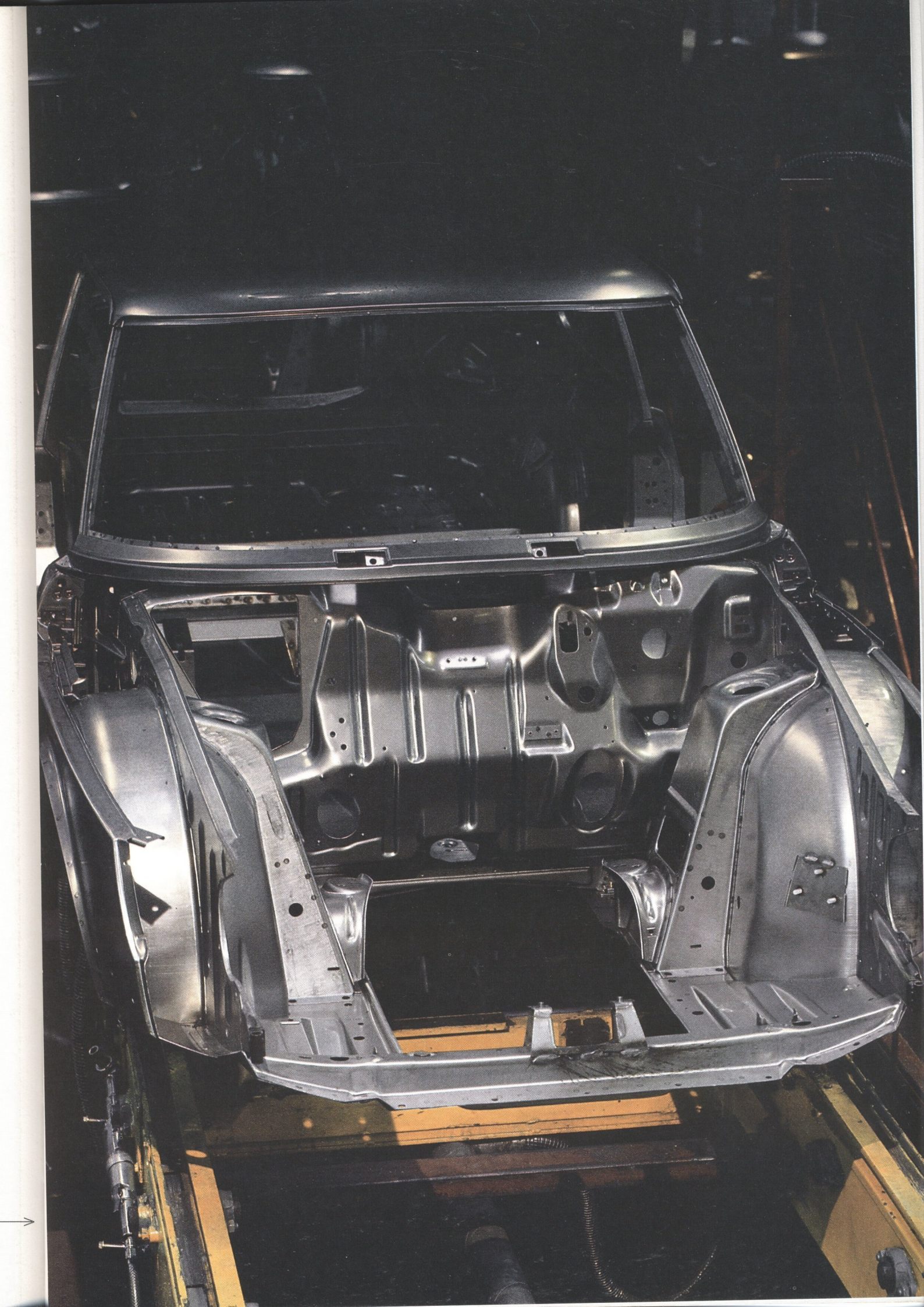
Totally enclosed electrical distribution box in a protected location in the engine bay.

Breakerless electronic ignition system.



The bumper with the integrated spoiler is corrosion-proof and protects large areas of the front against damage by stone chips.

Robust front wheel suspension, with double wishbones.



Technical specifications

ENGINE

Four cylinder, two liter, in-line engine, longitudinally mounted and inclined at an angle of 45 degrees. Cast iron cylinder block. Light-alloy cylinder head of cross-flow design. Five bearing crankshaft. Cooling system with electrically driven, thermostatically controlled radiator fan. Breakerless electronic ignition system. Three-way catalytic converter and Lambda sensor.
Displacement 121 cu in (1985 cm^3).
Bore 3.54 in (90 mm).
Stroke 3.07 in (78 mm).
Fuel tank capacity 16.6 gallons (63 liters).

Saab 900 Turbo SPG

Bosch LH-Jetronic electronic fuel injection. Garrett T3 turbocharger with water-cooled bearing housings and integrated waste gate (boost pressure control valve). Intercooler. Saab APC system for continuous boost pressure control. Dome-shaped combustion chambers with centrally located spark plugs. Double chain-driven overhead camshafts. Hydraulic, self-adjusting and service-free cam followers. Four valves per cylinder. Engine oil cooler.
SAE rating 165 bhp (121 kW) at 5500 rpm.
SAE peak torque 195 lb ft (265 Nm) at 3000 rpm.
Max. boost pressure 0.75 bar.
Compression ratio 9.0:1.
Recommended octane rating Unleaded 91–93 (pump rating).

Saab 900 Convertible/Turbo

Bosch LH-Jetronic electronic fuel injection. Garrett T3 turbocharger with water-cooled bearing housings and integrated waste gate (boost pressure control valve). Intercooler. Saab APC system for continuous boost pressure control. Dome-shaped combustion chambers with centrally located spark plugs. Double chain-driven overhead camshafts. Hydraulic, self-adjusting and service-free cam followers. Four valves per cylinder. Engine oil cooler.
SAE rating 160 bhp (118 kW) at 5500 rpm.
SAE peak torque 188 lb ft (255 Nm) at 3000 rpm.
Max. boost pressure 0.75 bar.
Compression ratio 9.0:1.
Recommended octane rating Unleaded 87–93 (pump rating).

Saab 900S

Bosch LH-Jetronic electronic fuel injection. Dome-shaped combustion chambers with centrally located spark plugs. Double chain-driven overhead camshafts. Hydraulic, self-adjusting and service-free cam followers. Four valves per cylinder. Breakerless electronic ignition with knock sensor control system.
SAE rating 125 bhp (92 kW) at 5500 rpm.
SAE peak torque 125 lb ft (170 Nm) at 3000 rpm.
Compression ratio 10.1:1.
Recommended octane rating Unleaded 87–93 (pump rating).

Saab 900

Bosch K-Jetronic mechanical fuel injection. Single, chain-driven overhead camshaft. Sodium-cooled exhaust valves.
SAE rating 110 bhp (81 kW) at 5250 rpm.
SAE peak torque 119 lb ft (161 Nm) at 3000 rpm.
Compression ratio 9.25:1.
Recommended octane rating Unleaded 87 (pump rating).

ELECTRICAL SYSTEM

Alternator 1070 W, 14 V 80 A.
Battery 12 V 60 Ah.
Starter motor 1.4 kW.

TRANSMISSION

Front wheel drive. Hydraulically actuated, single dry-plate clutch. Hydraulic torque converter instead of the clutch on cars with automatic transmission. The engine, clutch, gearbox and differential are integrated into a compact unit.

Saab 900 Turbo SPG

Five speed manual gearbox.

Saab 900 Convertible/Turbo

Five speed manual gearbox or automatic transmission.

Saab 900S

Five speed manual gearbox or automatic transmission.

Saab 900

Five speed manual gearbox or automatic transmission.

STEERING

Power-assisted rack and pinion steering gear. Jointed and telescopic steering column with cylindrical sheet metal bellows. Impact-absorbing, perforated sheet steel cage below the steering wheel.
Turning circle diameter Curb to curb 33 ft 10 in (10.3 m).
Number of steering wheel turns Lock to lock 3.7.

BRAKES

Self-adjusting disc brakes all round, with ventilated discs at the front. Asbestos-free pads—semi-metallic at the front and organic at the rear. Dual circuit, diagonally split brake system with vacuum servo. The handbrake acts mechanically on the rear discs.

SUSPENSION

Front: Double wishbones, with pivot-mounted, progressive action coil springs and gas shock absorbers. Stabilizer bars in the Convertible, Turbo SPG and Turbo. Recalibrated springs, shock absorbers and lowered ride height on the Turbo SPG.
Rear: Straight, rigid rear axle with coil springs, gas shock absorbers, two leading and two trailing arms and a Panhard rod. Stabilizer bars in the Convertible, Turbo SPG and Turbo. Recalibrated springs, shock absorbers and lowered ride height on the Turbo SPG.

WHEELS AND TIRES

Saab 900 Turbo SPG

Light-alloy wheels. High speed, low-profile tires. Compact spare wheel.
Wheel size 5½ J × 15".
Tire size 195/60 R 15 V.

Saab 900 Convertible/Turbo

Light-alloy wheels. High speed, low-profile tires. Compact spare wheel.
Wheel size 5½ J × 15".
Tire size 185/65 R 15 H.

Saab 900S

Light-alloy wheels. Low-resistance, low-profile tires. Compact spare wheel.
Wheel size 5½ J × 15".
Tire size 185/65 R 15 T.

Saab 900

Steel wheels. Low-resistance, low-profile tires. Compact spare wheel.
Wheel size 5½ J × 15".
Tire size 185/65 R 15 T.

LUGGAGE COMPARTMENT

Three-door Hatchback

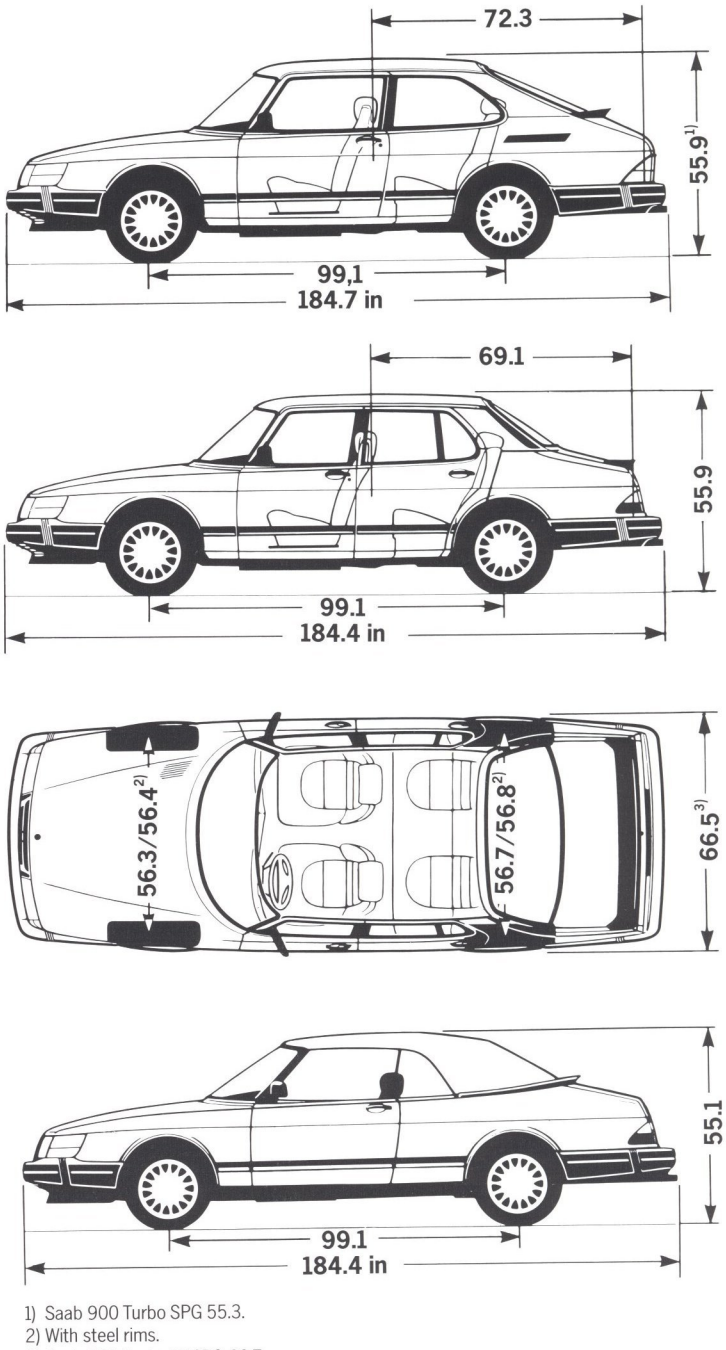
Standard luggage compartment 21.3 cu.ft (602 dm^3); SAE measurement 14.9 cu ft (421 dm^3). With parcel shelf removed 27.2 cu.ft (770 dm^3); SAE measurement 19.1 cu ft (540 dm^3). With the back seat folded down about 56.5 cu.ft (1600 dm^3).

Four-door Sedan

Standard luggage compartment 21.8 cu.ft (617 dm^3); SAE measurement 14.4 cu ft (408 dm^3). With the back seat folded down about 53.0 cu.ft (1500 dm^3).

Convertible

12.9 cu ft (364 dm^3). SAE measurement 9.8 cu ft (279 dm^3).



1) Saab 900 Turbo SPG 55.3.
2) With steel rims.
3) Saab 900 Turbo 16 SPG 66.7.

WEIGHTS*

Weight distribution About 61% front, 39% rear.

Saab 900 Convertible

Curb weight About 2985 lbs (1354 kg).
Gross vehicle weight rating 3900 lbs (1770 kg).

Saab 900 Turbo

Curb weight About 2895 lbs (1313 kg).
Gross vehicle weight rating 3830 lbs (1740 kg).

Saab 900 S

Curb weight Hatchback, about 2826 lbs (1282 kg). Sedan, about 2846 lbs (1291 kg).
Gross vehicle weight rating Hatchback 3740 lbs (1700 kg). Sedan 3740 lbs (1700 kg).

Saab 900

Curb weight Hatchback, about 2695 lbs (1222 kg). Sedan, about 2735 lbs (1241 kg).
Gross vehicle weight rating Hatchback 3650 lbs (1660 kg). Sedan 3650 lbs (1660 kg).

*) The weights vary with the type of body and the equipment included in the car.

PERFORMANCE

Saab 900 Turbo SPG

Top speed 125 mph with five speed gearbox.
Acceleration to 60 mph 9.0 s with five speed gearbox.

Saab 900 Convertible/Turbo

Top speed 125 mph with five speed gearbox. 120 mph with automatic transmission.
Acceleration to 60 mph 9.1 s with five speed gearbox. 10.5 s with automatic transmission.

Saab 900 S

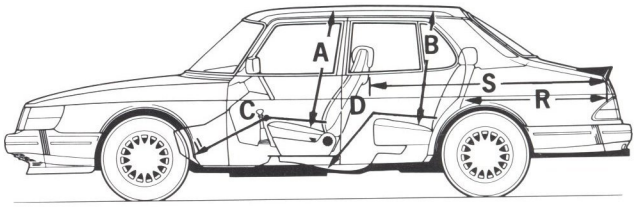
Top speed 110 mph with five speed gearbox. 105 mph with automatic transmission.
Acceleration to 60 mph 11.5 s with five speed gearbox. 13.5 s with automatic transmission.

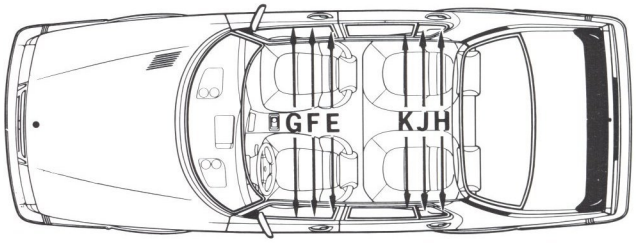
Saab 900

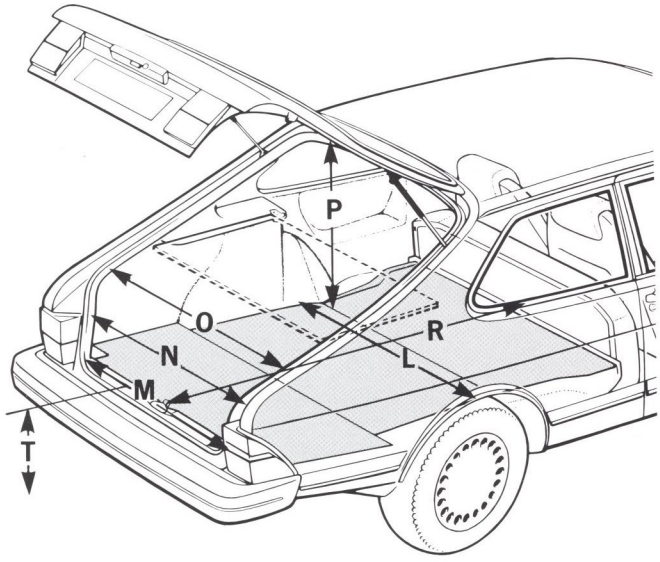
Top speed 105 mph with five speed gearbox. 100 mph with automatic transmission.
Acceleration to 60 mph 13.0 s with five speed gearbox. 15.0 s with automatic transmission.

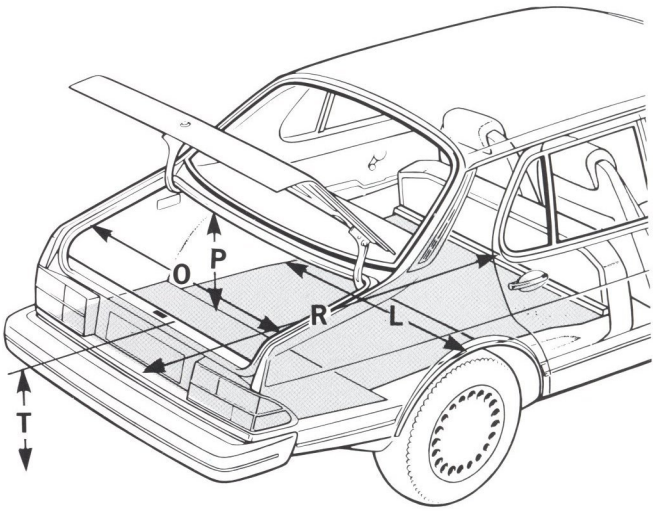
Inside dimensions (official SAE-measurements are given within brackets).

			3-doors		4-doors	
			in	mm	in	mm
A	(H 61)	without sunroof	37.8	960	37.8	960
B	(H 63)	for outer passenger	37.4	950	37.4	950
C	(L 34)		41.7	1060	41.7	1060
D	(L 51)		36.0	915	36.0	915
E	(W 3)	at shoulder height	52.4	1330	53.1	1350
F		at elbow height	53.8	1365	55.1	1400
G	(W 5)	at hip height	48.4	1230	52.9	1345
H	(W 4)	at shoulder height	53.3	1355	52.9	1345
J		at elbow height	60.9	1545	55.5	1410
K	(W 6)	at hip height	51.2	1300	53.1	1350
L	(W 201)	at wheel housings	39.8	1010	39.8	1010
M	(W 203)	at floor height	35.8	910	–	–
N	(W 204)	at belt height	41.7	1060	–	–
O	(W 205)	above belt height	41.1	1045	49.0	1245
P	(H 202)	opening height	31.5	800	17.7	450
R		back seat folded	72.2	1835	69.1	1755
S	(L 203)	raised back seat	47.6	1210	44.7	1135
T	(H 250)	lifting height	19.7	500	29.5	750

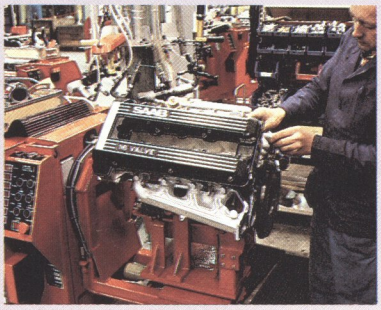


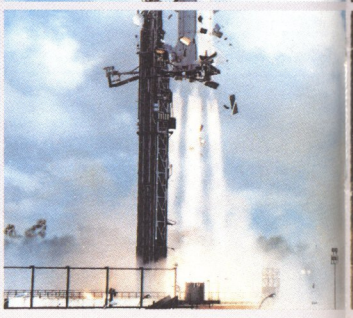










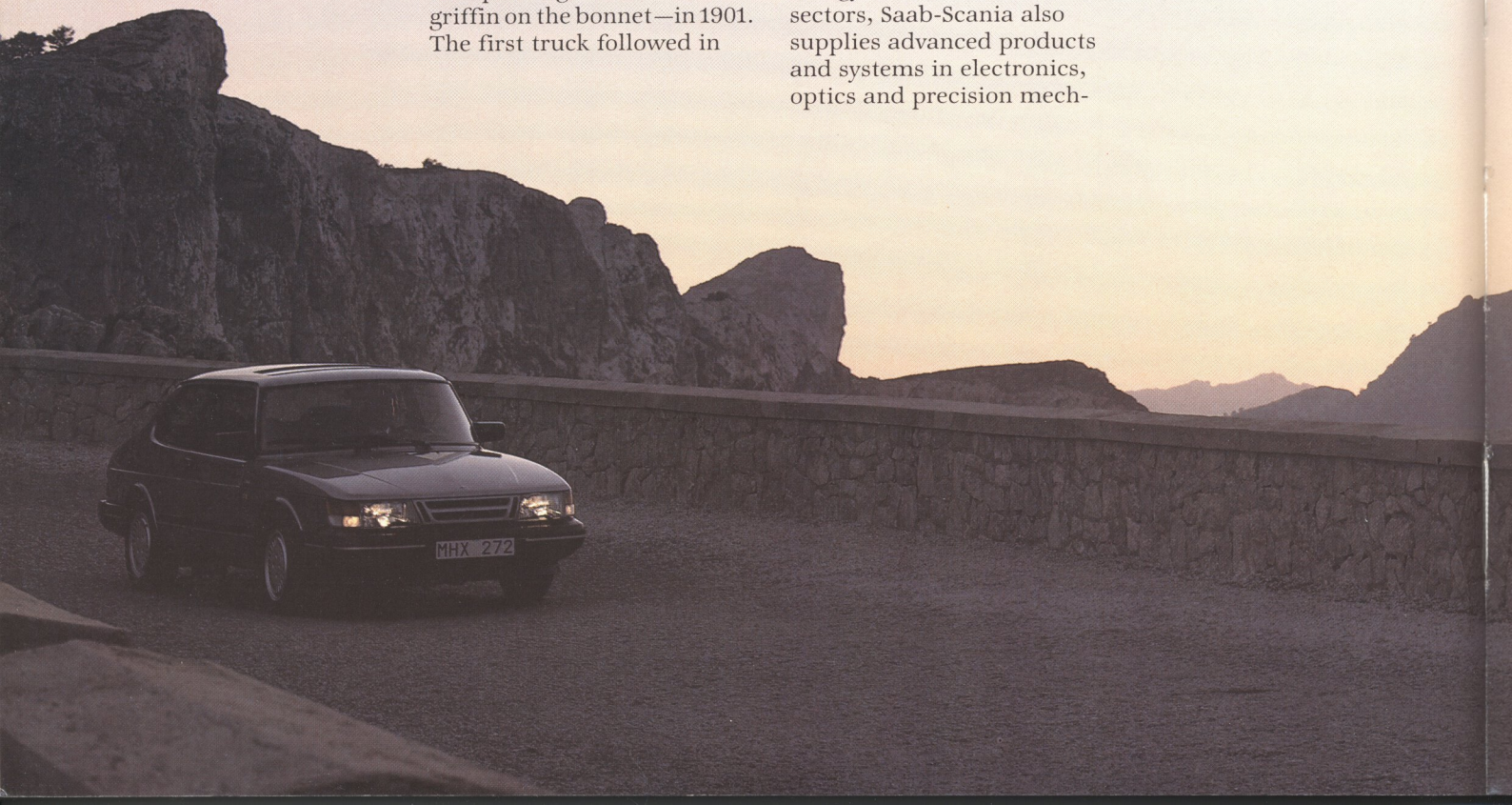
Saab-Scania holds a leading position in the transport and communication fields. The Group's technical know-how has been developed since the turn of the century. Its products can be found on the road, in the air and in space.

Vabis was supplying factory-made vehicles as far back as 1897. Scania introduced its first passenger car—with the griffin on the bonnet—in 1901. The first truck followed in 1902 and the first bus in 1911. Production of aircraft started in the early 1930s.

In the automotive and aerospace sectors, Saab-Scania's product program currently comprises passengers cars, trucks and buses, commercial and military aircraft, satellites and missiles.

Outside the transport technology and communication sectors, Saab-Scania also supplies advanced products and systems in electronics, optics and precision mechanics, as well as systems for energy recovery and heating.

Saab-Scania, with sales of SEK 35 billion and almost 50,000 employees, invests more than SEK 2 billion annually in research and development. A similar amount is invested in production and the international marketing organisation.



Saab-Scania's products are concentrated in well-defined business areas: high-performance passenger cars, trucks for heavy transport and aircraft for regional traffic.

This concentration in expansive market segments, combined with substantial investments in new products, has borne fruit. Saab-Scania today holds a leading position in the field of specialised transport technology.

Saab-Scania's company symbol represents sound technical know-how, long tradition and broad-based experience.

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