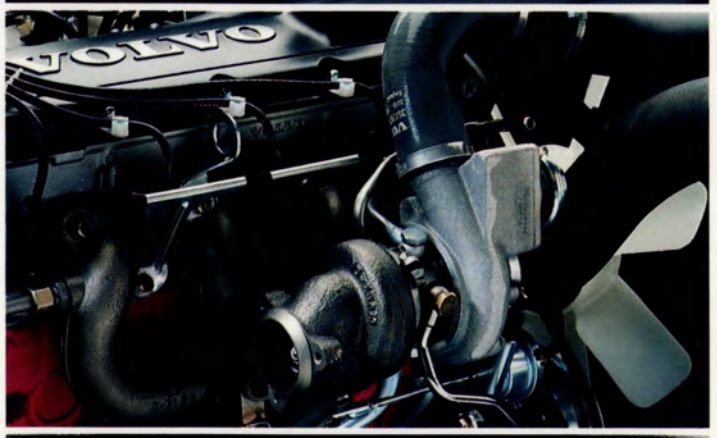
Volvo Car Corporation/Volvo Car BV

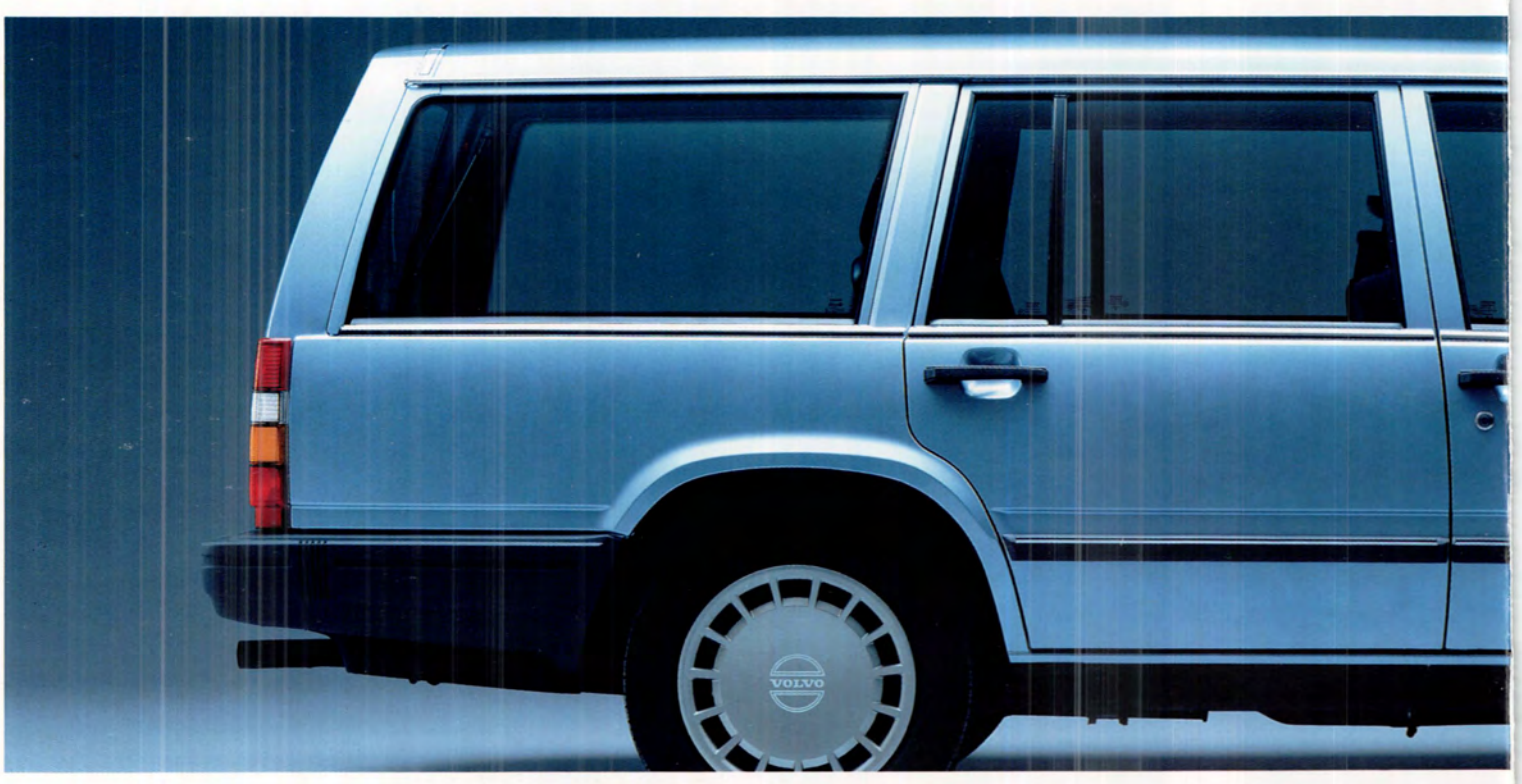
News

1990



VOLVO

FOR COMPANY USE ONLY


VOLVO

Welcome to this presentation of the most important and striking new features of the 1990 models.

The new model year will, above all, mean a significant improvement in the competitive strength of the 740. Its appearance is more modern and refined, and it gives a considerably greater impression of quality.

A number of new safety features will provide us with additional opportunities to emphasize Volvo's high level of safety: The most important of these are the safety-belt tensioners, which will be fitted to the 760 and 740, and an airbag for the European markets — as an option on the 740 and 240, and as standard on all Volvo 780 variants.

Volvo's quality and reliability are being constantly improved. The improvements for 1990 consist of wider use of the diagnostic system, better cold-starting characteristics for the Turbo engines and several modifications in the 400-series engines.

High technology is not and should not be a component of the Volvo profile, but we must keep up with new developments if we are to remain competitive.

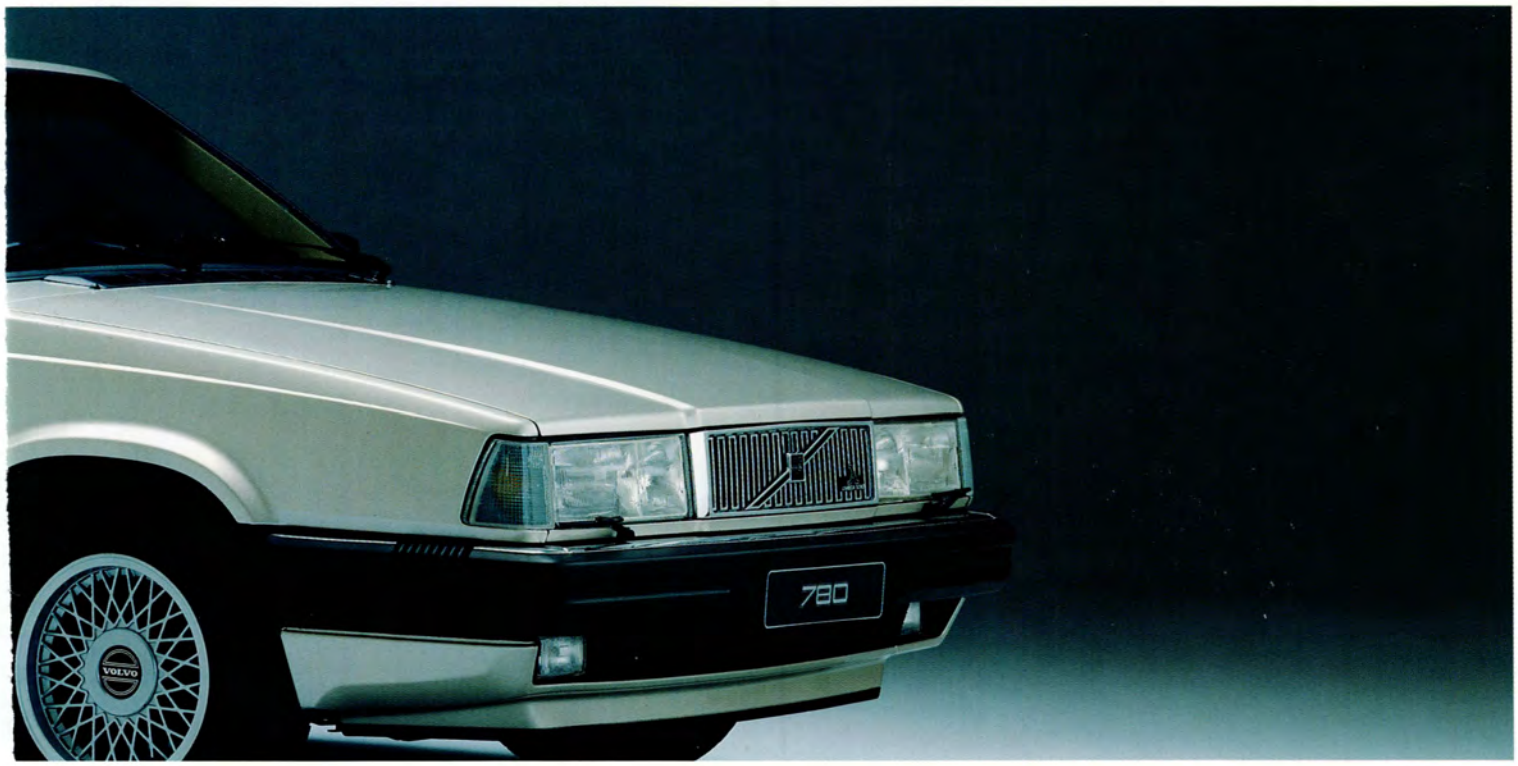
An excellent example of this is the new, two-litre, turbocharged 16-valve engine. It is fitted with balance shafts, and the exhaust-gas temperature and the boost pressure are controlled electronically. But we must remember that advanced technology in itself is not a sales argument. We must emphasize at all times how such new features and products can benefit the customer.

Volvo 780

The design of the Volvo 780 has been praised by automotive magazines and customers for its elegance. Additional improvements and higher-quality components are constantly being introduced, to ensure an even better fit and finish.

Wheels and tyres. The 780 will be fitted with multi-spoke aluminium wheels with a sober, classic appearance, and with size 195/65 tyres, for greater comfort.

New upholstery. Anthracite-grey upholstery will be introduced, and the blue/black upholstery will be withdrawn. The front seats can be folded down more easily, to facilitate entry into the back seat, and the fore-aft adjustment of the seats is more logical. No changes have been made in the range of exterior colours.



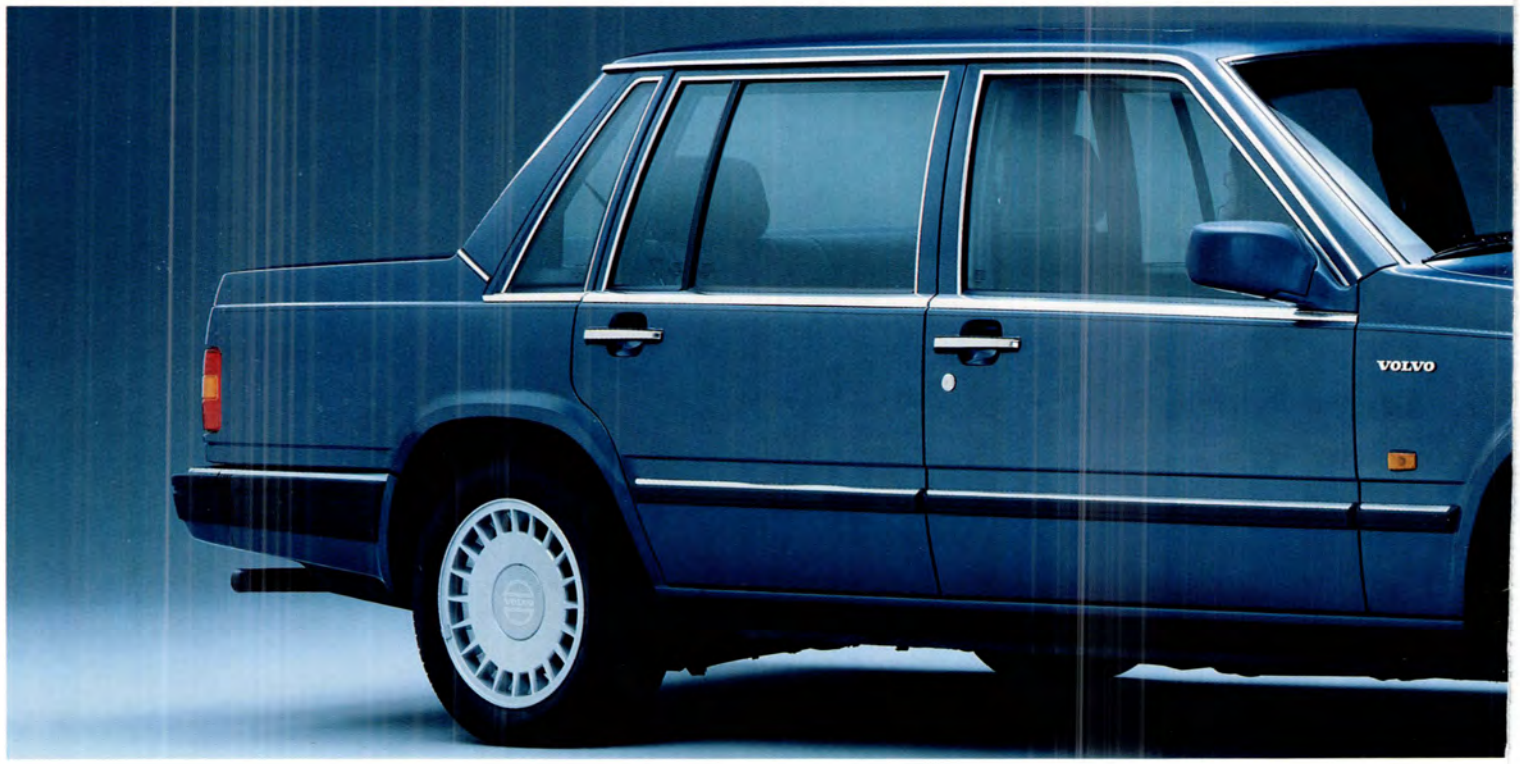
Driveline. A new generation B 230 FT Turbo engine will be introduced—with a turbocharger of new design and a new manifold which will improve the performance and the engine response.

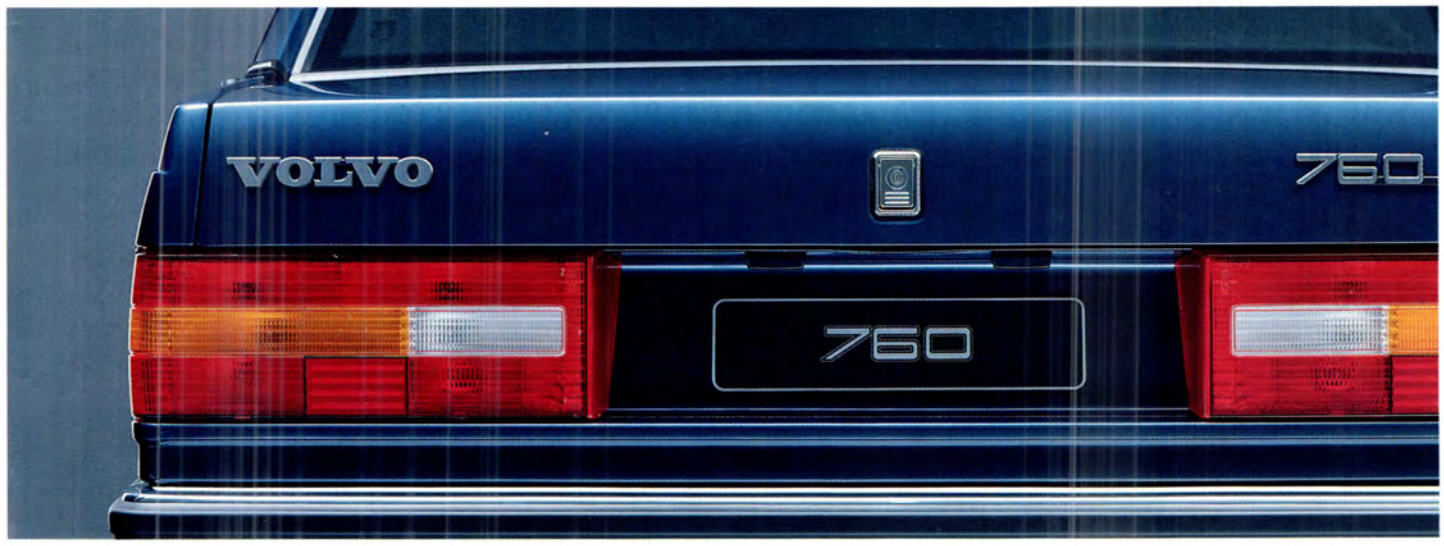
Bright grille. The most striking change in the appearance of the 1990 Volvo 780 is the new grille. This elegant, bright grille with vertical ribs gives the car even more character.

Airbag will be fitted as standard for all markets. It improves crash safety for the driver even further.

Volvo 760

The design of the 1988 Volvo 760 was an enormous success. Old and new customers alike were highly impressed by the car's exclusiveness. This year's design changes are intended to reinforce this impression and to enhance further the sensation of quality.





Leather steering wheel. A new, exclusive leather-covered steering wheel will be fitted as standard to all cars not equipped with air-bag (except on the Canada and Middle-East markets).

Safety-belt tensioners. All 760 variants will be fitted with mechanical safety-belt tensioners for both front seats (except on the USA market, where the airbag is fitted as standard). This new Volvo feature will provide additional crash safety.

New tail lights. For additional differentiation between the 760 and the 740, the tail lights of the 760 sedan model are of new design. They are larger and are similar in appearance to those of the 780.

Volvo 740

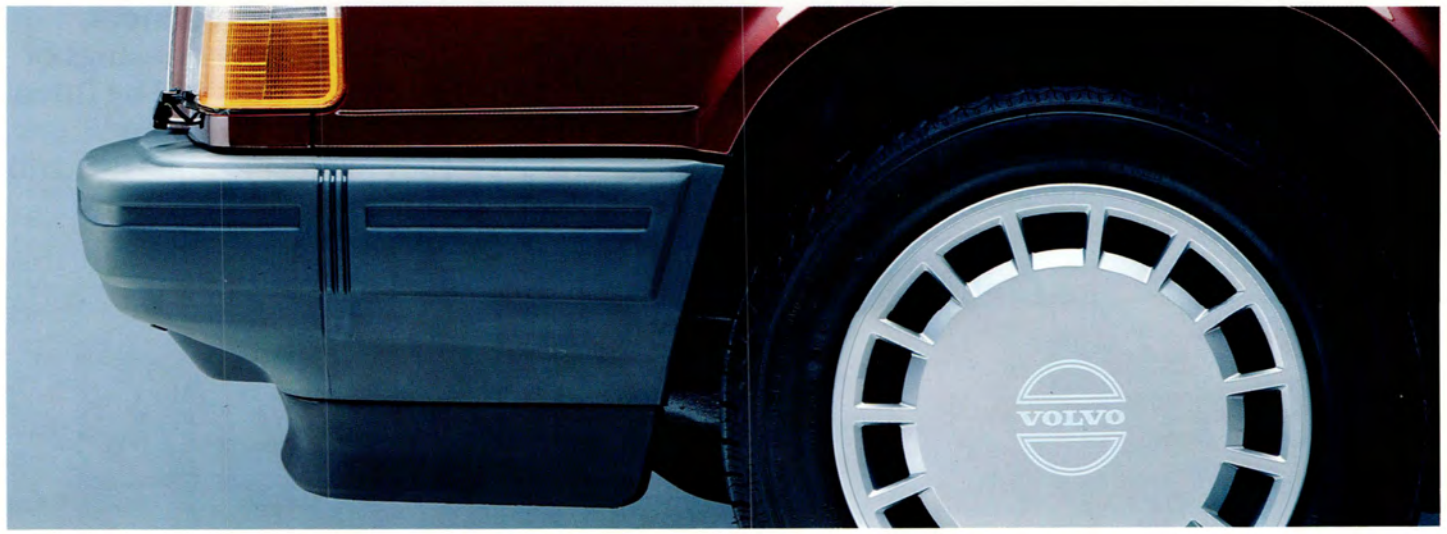
The most extensive changes for 1990 involve the 740. The exterior has got a new, soft, rounded front end. This new design is more modern and creates a considerably greater impression of quality.

The 1990 model will provide greater differentiation within the 740 family—the variations between the different exterior versions have been augmented. Each variant will be introduced on certain markets, in accordance with the corresponding market strategies.

New front. The GL variant (Exterior level B) has a soft, rounded front end with large, rectangular headlamps. Panels of the same colour as the body surround the characteristic Volvo grille, which is lower and more elegant. The bumpers and spoiler form a single unit, and give the front end its character.

The engine bonnet is also softer. It slopes down towards the grille at the front edge.

Two other versions of the same basic design will be available on some markets: Exterior level C, with a bright grille and trim strips, and exterior level D, which has a cross-hatched grille and black trim.


VOLVO

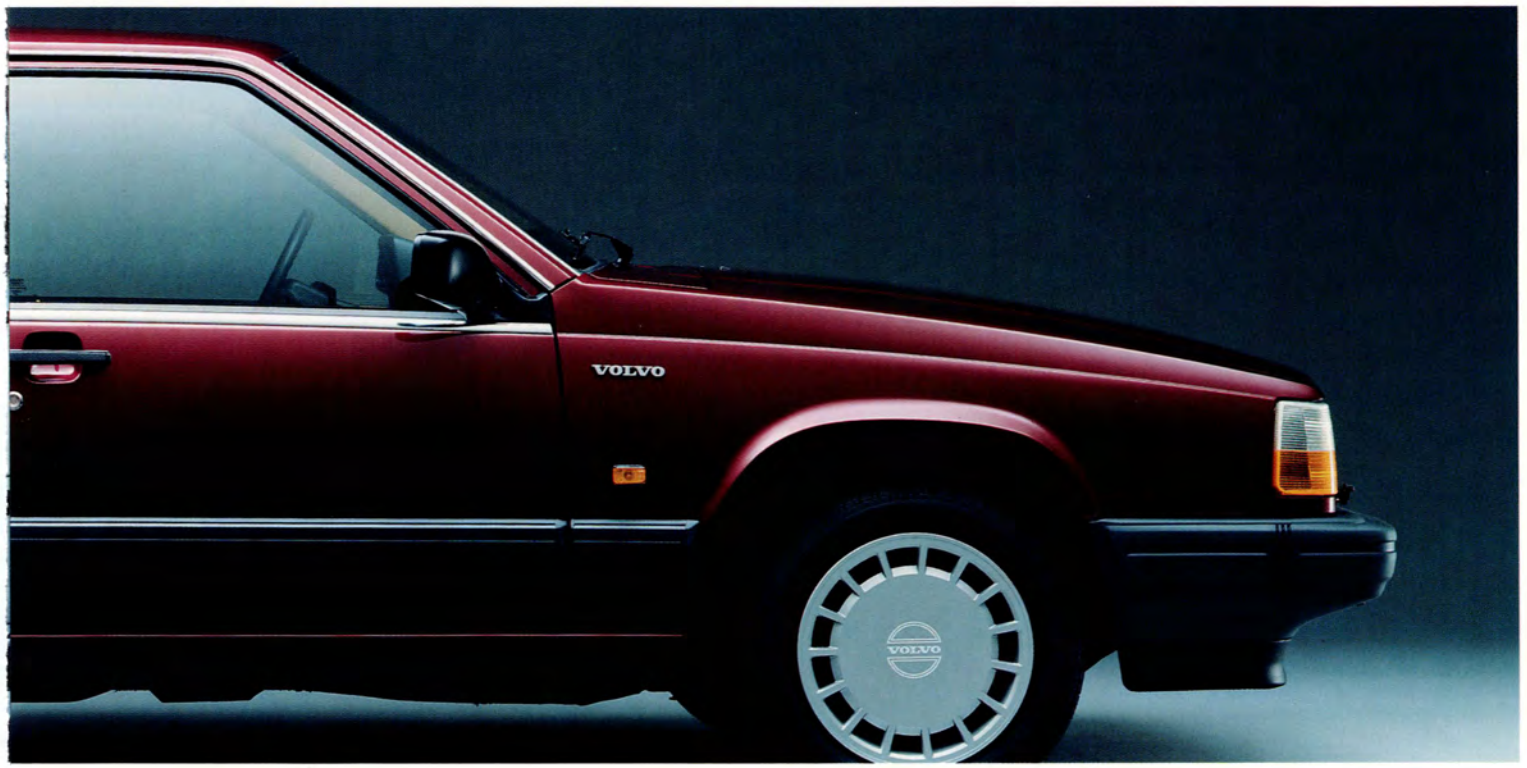

740

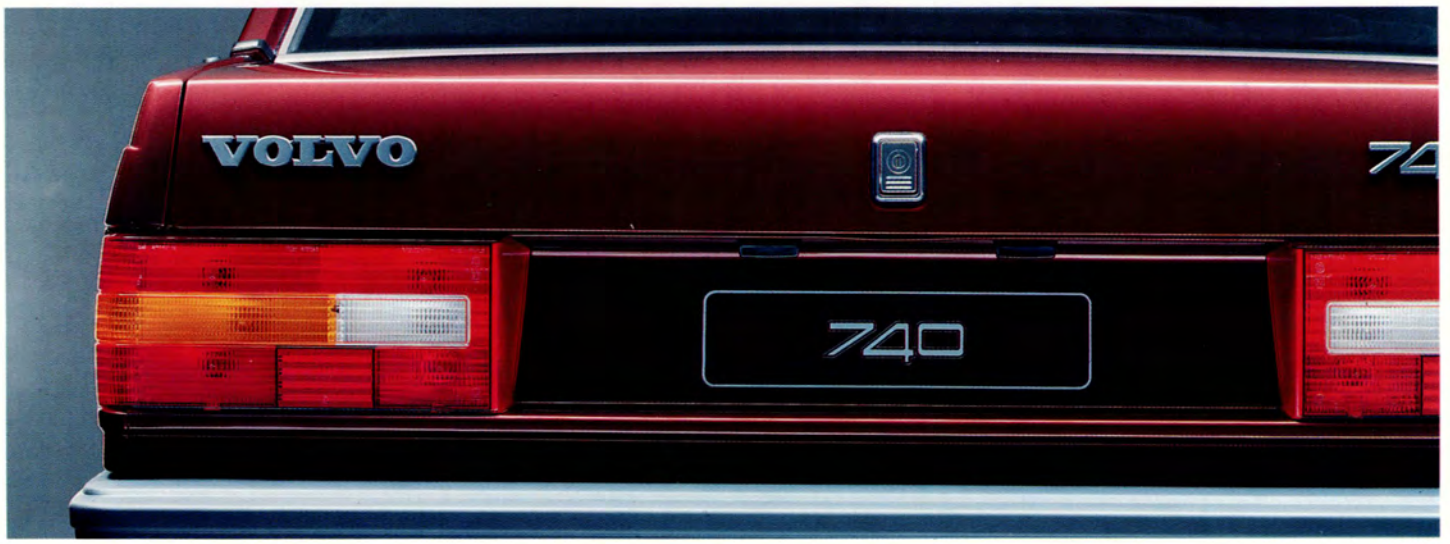
Black decor strips. The decor strips on the doors and at the lower edge of the windscreen will be black on all variants.

Protective wing liners. The front wheel housings of all 740 variants will be fitted with plastic wing liners. They protect against dirt and reduce road noise in the interior.

New tail lights. The tail lights of the sedan model are of new design. They are similar in appearance to those of the 760, but smaller.

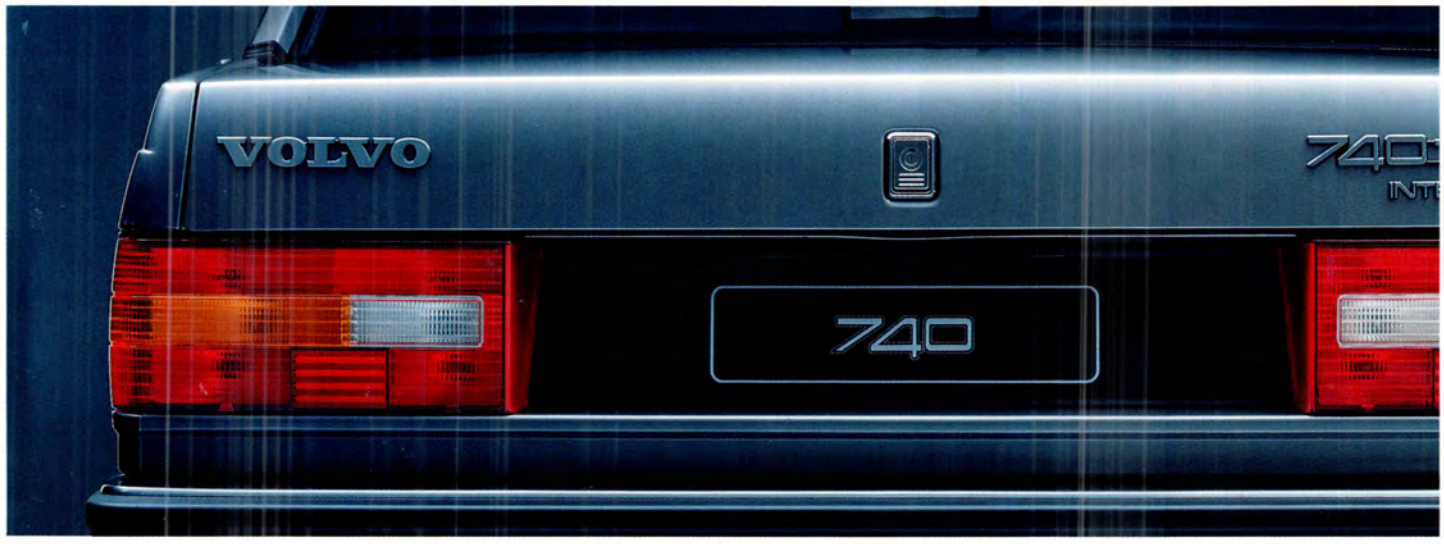
The design of the rear bumpers is also new and are softly rounded.


VOLVO
VOLVO


VOLVO
740

TOP-OF-THE-LINE VERSIONS

The appearance of most exclusive 740 models differs clearly from that of the basic variants. On most markets, exterior level E, with black decor, will be available. Exterior level G, with predominantly bright trim, will also be offered on some markets.



Different front ends. The front ends distinguish the top-of-the-line versions. The headlamps are of the same design as those of the 760, with integrated fog lamps and supplementary full beams. For level-E cars the grille is cross-hatched and painted with dark-grey metallic paint. The bumpers and spoiler are black and form a single unit. A decor strip located above the bumper is also finished in dark-grey metallic paint.

The decor strips on the car windows and sides are black, and the sedan model has a black screen at the rear edge of the side windows. The decor strip on the rear bumpers is also finished in dark-grey metallic paint, and a black decor panel is fitted between the tail lights.

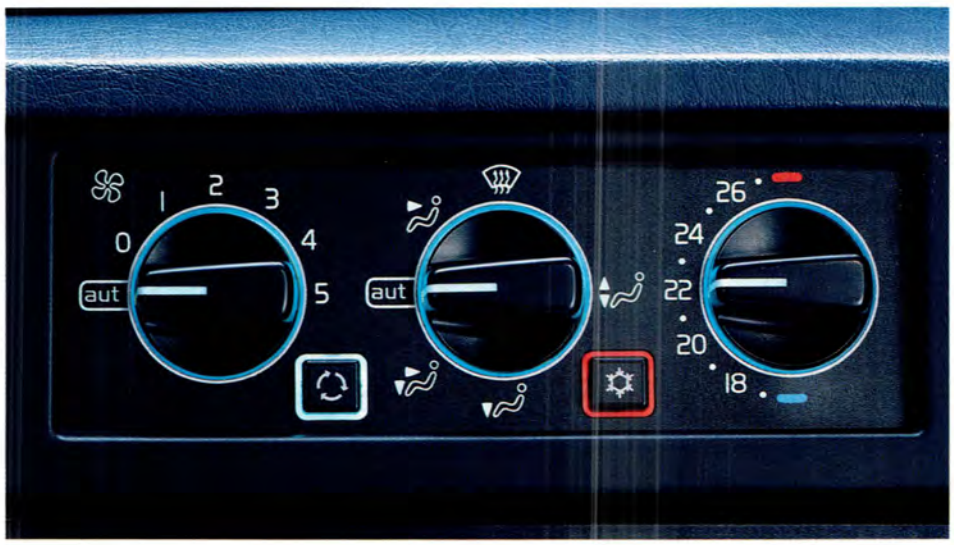
MORE OPTIONS FOR THE 740

A wider selection of interior features will be available for the 1990 Volvo 740, and new comfort options will be introduced.

New Turbo wheels. A totally new 16-inch wheel will be introduced for the 740 Turbo. It has five rugged spokes, for efficient cooling of the brakes and easy cleaning. This wheel is made of heat-treated aluminium and weighs only 8 kg.

The new wheels are fitted with 205/55 VR tyres. They provide good handling, stability and performance also on wet road surfaces.

ECC also for the 740. The Electronic Climate Control (ECC) system, the most advanced climate-control unit, will replace ACC. The ECC system has a high heating and cooling capacity, and it offers highly-accurate automatic control. Moreover, ECC can be fitted to cars equipped with ABS brakes, something that was impossible on cars with ACC for reasons of space.



Electrically-operated seats. Electrically-operated front seats will be available as an option on all 740 models with plush or leather upholstery. All 740 interiors will be matched to the colour of the present 760 interiors. Grey will be added to the range of interior colours for the 740.

Airbag. The airbag will be available as an option on some variants, even on the European market.

The Volvo safety-belt tensioner. During the model year, mechanical belt tensioners will gradually be introduced for all 740 variants (except on the USA market). This important new feature will increase Volvo's level of crash safety even further.

During the first instants of a head-on collision, the deformation zones of the car body start to brake the forward movement of the car. The occupant, on the other hand, continues forward until the slack in the safety belt has been taken up.

The reason for this slight delay in the function of the safety belt is that the belt was not tightened sufficiently at the instant of collision. The slack is specially great if the occupant is wearing heavy outer clothing.

Having the safety belt tightly fastened during the entire journey would be uncomfortable. A better solution is to tighten the safety belt at the instant of collision.

The mechanical belt tensioner starts to tighten the safety belt only ten thousandths of a second or so after the instant of collision, and the belt is completely tightened after an additional 15 thousandths of a second. The body of the occupant scarcely has time to move away from the backrest of the seat. The belt can thus restrain the occupant more efficiently, so he is subjected to less stress.

The safety-belt tensioner consists of a pre-tensioned torque rod inside a tube, and the unit is fitted at the rear edge of the seat. The torsion spring acts on a lever on the safety-belt lock, which is pulled downwards when the tensioner is activated. Thus, the diagonal belt and the hip belt are tensioned equally and simultaneously, with a force of 1000 N. The spring tension pulls the lock downwards as much as 80 mm.

The operation of the safety-belt tensioner is fully mechanical. In a collision, the torque rod inside the tube is thrown forward, causing it to actuate the mechanism which releases the tensioner. The mechanism reacts with enormous speed and the spring pulls the safety-belt lock downwards, thus tensioning the belt.

THE THIRD-GENERATION TURBOCHARGER

Volvo's development work in turbocharger technology has resulted in the creation of a third-generation turbocharger. The most important differences in the new turbocharger are its smaller size and a totally-new exhaust manifold.

In addition to taking up less space in the engine compartment, the new turbocharger also winds up faster. Moreover, the new exhaust manifold enables the energy in the exhaust gases to be utilized with extreme efficiency. The time required to reach a given boost pressure has been reduced by no less than 30% to 40%.

The driver will note this in the extremely fast response when he depresses the accelerator pedal — there is no noticeable "Turbo threshhold". The engine has plenty of spirit, the car is easy to drive and the low-speed traction is excellent.

This new-generation turbocharger is fitted to the B 230 FT and B 230 GT engines.

Performance of the B 230 FT third-generation Turbo:

Max. output: 121 kW
(Gen. 2: 115 kW)
Max. torque: 265 Nm
(Gen. 2: 242 Nm)

New gear ratio for petrol-fuelled Turbo engines. Manual gearboxes fitted to petrol-fuelled Turbo engines will have a more-convenient first-gear ratio: 3.71:1 instead of the current 4.03:1. This will make the car easier to handle at low speeds, i.e. in bumper-to-bumper traffic, etc.

Improved clutch. All 200-series and 700-series cars will be fitted with a low-lift clutch which requires around 16% less pedal pressure. On the Turbo models, however, the pressure-plate tension has been increased by the same amount, so the pedal pressure will be the same as previously.

A hydraulically-controlled clutch will be introduced for all 700-series cars. This

clutch is highly-reliable and it requires no service. The cable adjustment which is currently performed at 2000 km can thus be eliminated.

Only one B 234 F version. As from the 1990 model year, only one version of the 16-valve B 234 F will be available. The engine has a maximum output of 114 kW, and it can be fitted with a manual gearbox or an automatic transmission.

New differential lock. A new, automatic differential lock will be introduced for the entire 700-series. It ensures better traction on slippery road surfaces, but it will not otherwise affect the handling characteristics. The new differential lock will engage automatically if one of the drive wheels spins as the car starts off from a standstill, to provide maximum road grip and traction at both wheels. It automatically disengages at around 40 km/h, so it will not impair the car's handling characteristics under normal conditions.

The new differential lock will be fitted as standard on some markets and will be available as an option on others.

The new Turbo engine. The B 230 ET has been withdrawn and will be replaced by the B 230 GT. This engine is basically the same as the B 230 FT, but it is not equipped with a catalytic converter, so it can be run on leaded fuel. It is fitted with a lead-resistant Lambda Sond which controls the fuel-injection system. It also has an EVAP system. The latter collects evaporated fuel and returns it to the engine. This engine is also equipped with a third-generation turbocharger.

Diagnostic system for the petrol-fuelled Turbo engines. Starting this year, the petrol-fuelled Turbo engines will also be equipped with the diagnostic system fitted to the 16-valve engine and the B 230 F. This electronic monitoring system locates any faults in the fuel and ignition systems. The mechanic can detect faults more easily during service, and he can also use the diagnostic system to check other functions.

On all engines equipped with a catalytic converter, this diagnostic system actively monitors the exhaust emissions. Should a fuel or ignition system fault appear which increases the exhaust emissions, a warning lamp on the instrument panel will light up and alert the driver.

The Turbo engines are also fitted with a cold-start valve which ensures even more-reliable starting in extreme cold.

Headlamp-beam adjusters. Electrically-operated headlamp beam adjusters will be fitted to cars for the West-German market. They enable the driver to adjust the headlamp beams electrically, from the dashboard. He can thus lower the beams when the car is heavily loaded, to prevent them from blinding oncoming drivers.

Day running lights to be withdrawn. The automatic day running lights (extra-bright parking lights) will be withdrawn. Cars for markets on which this system was previously used will instead be equipped with automatic dipped beams. The dipped beams and tail lights will light up when the ignition is switched on.

Exhaust-emission control for California. To meet the extremely stringent environmental requirements in California, Volvo is introducing a larger catalytic converter and electronically-controlled EGR (Exhaust-Gas Recirculation) for all cars for the California market.

New exterior colours. On all models except the 780, colours 096 (dark blue) and 213 (intermediate blue) will be replaced by new blue colours which are better-matched to the blue interior.

THE 16-VALVE TURBO ENGINE – B 204 GT

An entirely new engine variant will be introduced on some European markets: a four-cylinder, turbocharged two-litre engine with 16 valves and dual balance shafts. This highly-advanced engine is loaded with the latest in automotive technology.

The performance is excellent. The combination of turbocharging and 16-valve technology provides the best of both features: the extra output of a turbocharger and the uniform pulling power and get-up-and-go of a 16-valve engine. The maximum output is 136 kW and the controlled maximum torque is 265 Nm (preliminary).

Electronic fuel and ignition systems. The engine is equipped with electronic fuel and ignition systems which, together with the balance shafts, ensure extremely smooth running at all engine speeds and loads. The fuel-injection system is controlled by an oxygen-sensing Lambda Sond which regulates the fuel/air mixture. The Lambda Sond is resistant to lead — the engine is not fitted with a catalytic converter.

Efficient cooling. High-output engines have a tendency to overheat, specially at high ambient temperatures. On this engine however, several measures have been taken to eliminate the problem:
– The turbocharger is water-cooled via the engine's ordinary cooling system.
– An intercooler cools the intake air, thus increasing the engine performance.
– The pistons are oil-cooled. After flowing through the water-cooled oil cooler, the lube oil is sprayed on the undersides of the pistons through special jets. The pistons are thus cooled directly and efficiently, even at the instant of combustion.
– The engine is equipped with an electrically-driven radiator fan. This two-speed fan is thermostatically-controlled, so, unlike a belt-driven fan, its speed does not vary with the engine speed. Moreover, there is no power loss. This reduces considerably the likelihood of overheating in bumper-to-bumper traffic.
– An electronic control system called EGTC regulates the exhaust-gas temperature. It also reduces the fuel consumption under normal driving conditions.

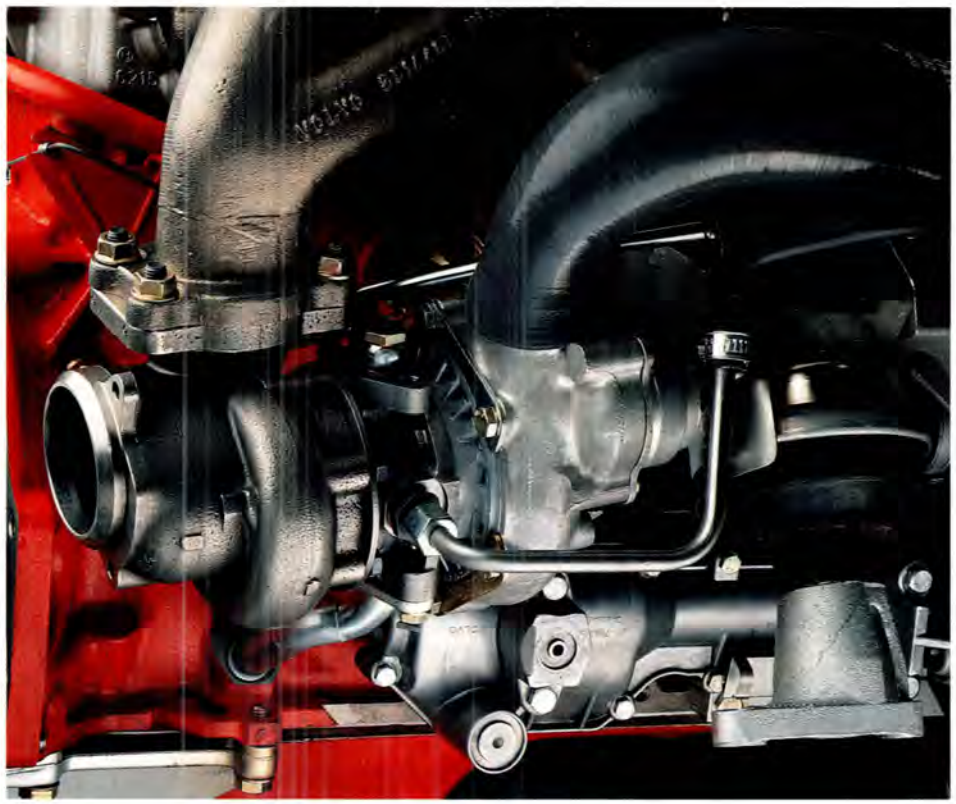
The exhaust-gas temperature. A turbocharged engine works as a supercharged engine once the turbocharger has come up to speed, and as a normally-aspirated engine when the engine load is light. To ensure that the engine will provide good performance under both conditions, the compression in the cylinders must be relatively high. A drawback of high compression is that the engine is susceptible to knocking. The combination of supercharging and high basic compression increases the likelihood that the fuel/air mixture will ignite too early, due to the heat of compression in the cylinders. When the knock-sensor detects knocking, the ignition system compensates by retarding the timing.

As a result, part of the combustion process takes place in the exhaust manifold instead of in the cylinders, which causes the exhaust-gas temperature to rise.

The normal way to enable an engine to run on low-octane fuel is to provide an extra-rich fuel mixture when the risk of knocking is high. This lowers the combustion temperature and prevents the exhaust-gas temperature from becoming excessively high, but it also increases the fuel consumption and reduces the performance.

On the B 204 GT, this problem has been solved in a more sophisticated way: An electronic control system, EGTC, monitors the actual exhaust-gas temperature at all times via a sensor. When a full load is placed on the engine for short periods, i.e. on overtaking, etc., the exhaust-gas temperature does not have time to rise to a critical level, so no compensation is required. EGTC modifies the fuel/air mixture only when the temperature becomes excessive. This provides two important benefits:

– The engine can be designed for optimum operation under normal driving conditions instead of under extreme conditions, for better performance.
– The average fuel consumption is lower, since an extra-rich mixture will be supplied only when it is required.



Electronic boost-pressure control. The boost pressure is also regulated electronically, by a microprocessor which takes into account a large number of factors, and thus provides the optimum boost pressure in any given situation. The extra power provided by the turbocharger can be used to maximum advantage, without the usual disadvantages of turbocharging, such as slow response, poor low-speed traction, etc. The B 204 GT is an engine with plenty of spirit, fast response and a perfectly-flat torque curve. The engine reaches maximum torque at only 2400 r/min, and the torque remains constant up to 5000 r/min.

The boost pressure is measured by an absolute-pressure gauge in the intake manifold, immediately downstream of the throttle valve. This system makes it possible to compensate for lower-than-average atmospheric pressures — at high altitudes, etc.

The boost pressure is controlled by a waste gate. The waste gate allows some of the exhaust gases to bypass the turbocharger, and thus regulates the boost pressure. The more the waste gate opens, the lower the boost pressure.

The boost pressure (the opening angle of the waste gate) is controlled by the brain of the system: a microprocessor located in the interior. This microprocessor takes many factors into account before determining the boost pressure for a specific situation. The pressure is regulated in accordance with the engine speed, to ensure that it is greatest when it is needed most. As a result, the torque curve is perfectly flat. The engine response is practically the same every time the driver depresses the accelerator pedal, regardless of the engine speed.

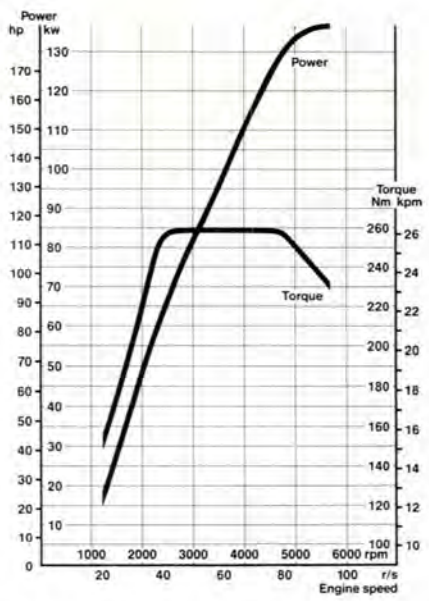
The system also takes into account how hard the accelerator pedal is being depressed. When the driver presses the accelerator pedal to the floor, the boost pressure is increased to a maximum, to provide top acceleration. The system also switches off the air-conditioning compressor, thus saving an extra 3–4 kW which can instead be transmitted to the drive wheels.

When knocking occurs, the ignition system notifies the boost-pressure control system, and the latter reduces the boost pressure. This helps to eliminate knocking immediately.

The diagnostic system. An integrated diagnostic system constantly monitors all important functions. The fault codes of any faults which occur will be stored in the system memory, where they can be retrieved by a mechanic when the car is taken to the workshop. Service can thus be performed quickly and efficiently, and faults can be detected at an early stage.

"Self-teaching" functions. The boost-pressure control system has several "self-teaching" functions. The system is programmed with the basic settings before the car leaves the factory, but it then adapts to current driving conditions and the condition of the engine. As the car is driven, the system monitors the engine and adapts to the prevailing conditions, to ensure optimum performance. Thus, variations between different engines are quite small, since the system compensates for any differences.

The manual gearbox and Multilink. The engine for the top-of-the-line 740 variant will be equipped with an M46 manual gearbox, and the sedan model will be fitted with the Multilink rear suspension as well. The engine, designated B 204 GT, will be introduced on the Italian market and on a few other European markets in the autumn of 1989.



Basic specifications for the B 204 GT (preliminary)
RON: 95
Output: 136 kW
Torque: 265 Nm at 2400 to 5000 r/min

Volvo 240

The appearance of the 240 is unique in many ways: its design is practically timeless. Thus, no drastic changes have been introduced, but a few small adjustments have been made in this highly-successful design.

Better audio equipment. The audio equipment of the 240 has been improved. On the estate car an opening for an aerial has been provided in the rear pillar. Cars with central locking will be pre-wired for rear speakers, and on the USA and GB markets, they are also factory-fitted with front and rear speakers.

The airbag makes the 240 even safer. The airbag is now also available for the 240. This passive safety system, located inside the steering wheel hub, protects the driver in case of a head-on collision by inflating at enormous speed and restraining him.

The airbag will be fitted as standard to cars for the USA market, and will be available as an option on some variants for the European market.

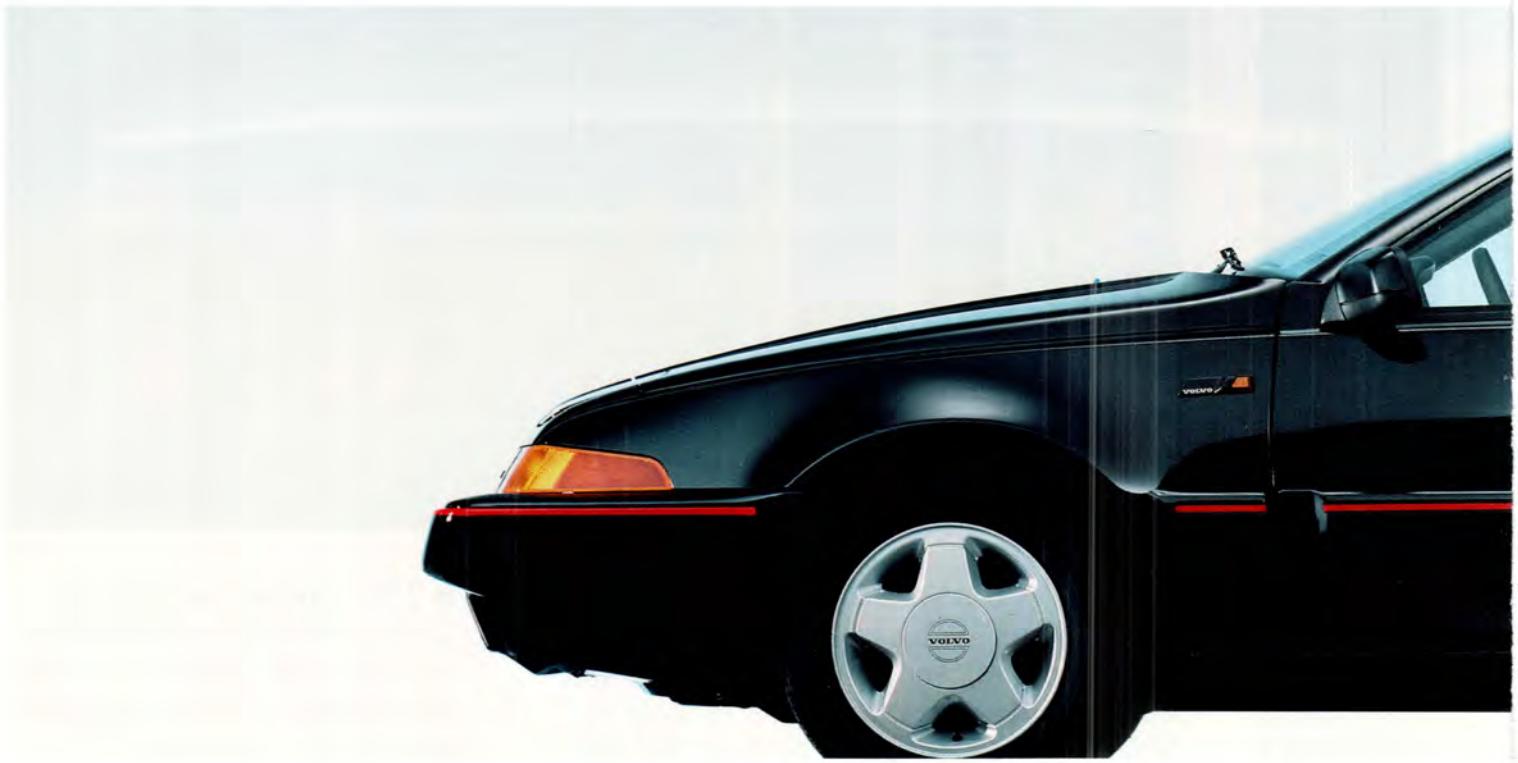
Tailgate of new design. The estate car has a new tailgate. The size of the rear window has been increased without modifying its soft contours, by reducing the size of the "frame" around it. This gives the 240 a more modern appearance without producing any essential changes in its character. A larger rear-window wiper has also been fitted. It keeps more of the window clear, for better visibility to the rear.

Standard tail lights. The tail light clusters of the sedan models for all markets have the rear light-bulbs moved to the outer position of the cluster.

B 230 E modified. The B 230 E fuel-injection engine has been modified to run on 95-octane fuel, so unleaded fuel should be used.

Volvo 480

In addition to the new features which are common to the 480 and 440 models—such as the new B 18 EP and FP engines, the optional automatic transmission, the vastly-improved heating and ventilation system, the optional air-conditioning and the new upholstery fabrics—the exterior and interior of the 1990 Volvo 480 will be modified, and a new colour programme will be introduced.



New exterior colours.
New exterior colours will be introduced for the 1990 models, bringing the total to 6 (2 solid and 4 metallic).
The new colours are:

234 White
311 Lavender Blue Metallic

Door mirrors. The new door mirrors can be folded back so that they lie flat against the window. This is useful when extra clearance is required at the sides.

Safety-belt locks. The front safety-belt locks are now positioned higher and are easier to find, to facilitate the fastening and unfastening of the safety belts.

Safety-belt mountings. The B-pillar safety-belt mountings have been redesigned to turn more easily. They are also made of a stronger material, to prevent breakage.

Body styling kit. An eye-catching body styling kit was introduced as an accessory during the previous model year.

Volvo 440

New exterior colours. New exterior colours will be introduced for the 1990 models, bringing the total to 14 (5 solid and 9 metallic). The new colours are:

234 White
314 Vase Green Metallic

Lower suspension. The ground clearance of the 440 DL, GL and GLE models has been reduced. It is now equal to that of the current 440 GLT and 440 Turbo. This not only improves the appearance, but also provides considerably better handling response at motorway

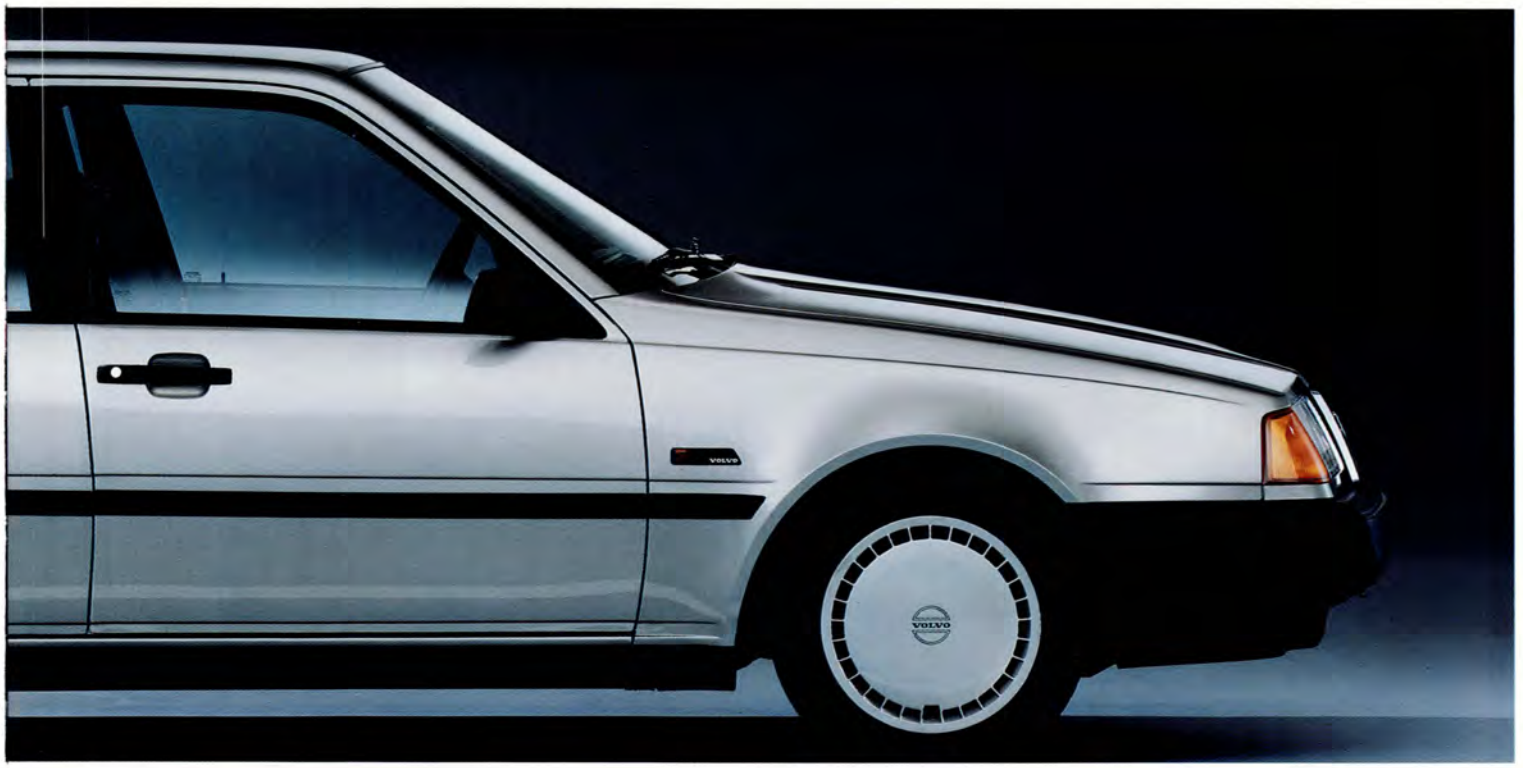
The new 440 DL. A new entry-level variant for the 440 range will be introduced in 1990: the 440 DL. It is available with the new B 18 K or B 18 KD engine, or with the current B 18 KP or KPD engine. The new engines are basically the same as the B18 KP and KPD, but they have a single exhaust downpipe and a new engine control system.

The B 18 K variant (without catalytic converter) delivers 59 kW, while the B 18 KD engine (with a three-way catalytic converter) can provide up to 57 kW.

440 DL — specification. Basically, the 440 DL is fitted with the same equipment as the 440 GL, with the following main exceptions:
- Central locking is not fitted.
- The steering column is not vertically-adjustable.
- The driver's seat cushion is not vertically-adjustable.
- The back-seat backrest is not split.

Ongoing changes in 1988. Numerous ongoing changes and specifications for additional equipment or options were introduced for the 440 during the previous model year. The most important ones are listed below:
- An optional sunroof in smoked glass. It is electrically-operated, and it has a retractable air deflector and an automatic roller-type sunshade.
- Double door seals. They lower the noise level in the interior and increase the occupant comfort considerably at high speeds.
- A cooling system has been developed to eliminate the hot-starting and hot-running problems of the B 18 KP and B 18 KPD engines.

speeds. The use of standard parts across the range will also help to reduce stock levels.



– The amount of zinc-coated material used in the 440 has been increased by 20%, which will inevitably increase the service life of these models. This time the increase was from 50% to 61% by weight, and consisted of single-sided and double-sided zinc coatings.

– The automatic bonnet stay has been replaced by a manually operated stay, since owners sometimes twisted the bonnet inadvertently, causing damage. The service and workshop bonnet positions have been retained.
– The exhaust system has been redesigned, for reduced exhaust-noise and a lower sound level in the interior.

– The 440 will be pre-wired as standard for a radio, A-pillar tweeters and door speakers. A coaxial aerial cable and a power-supply cable for an electrically-operated aerial will also be provided.

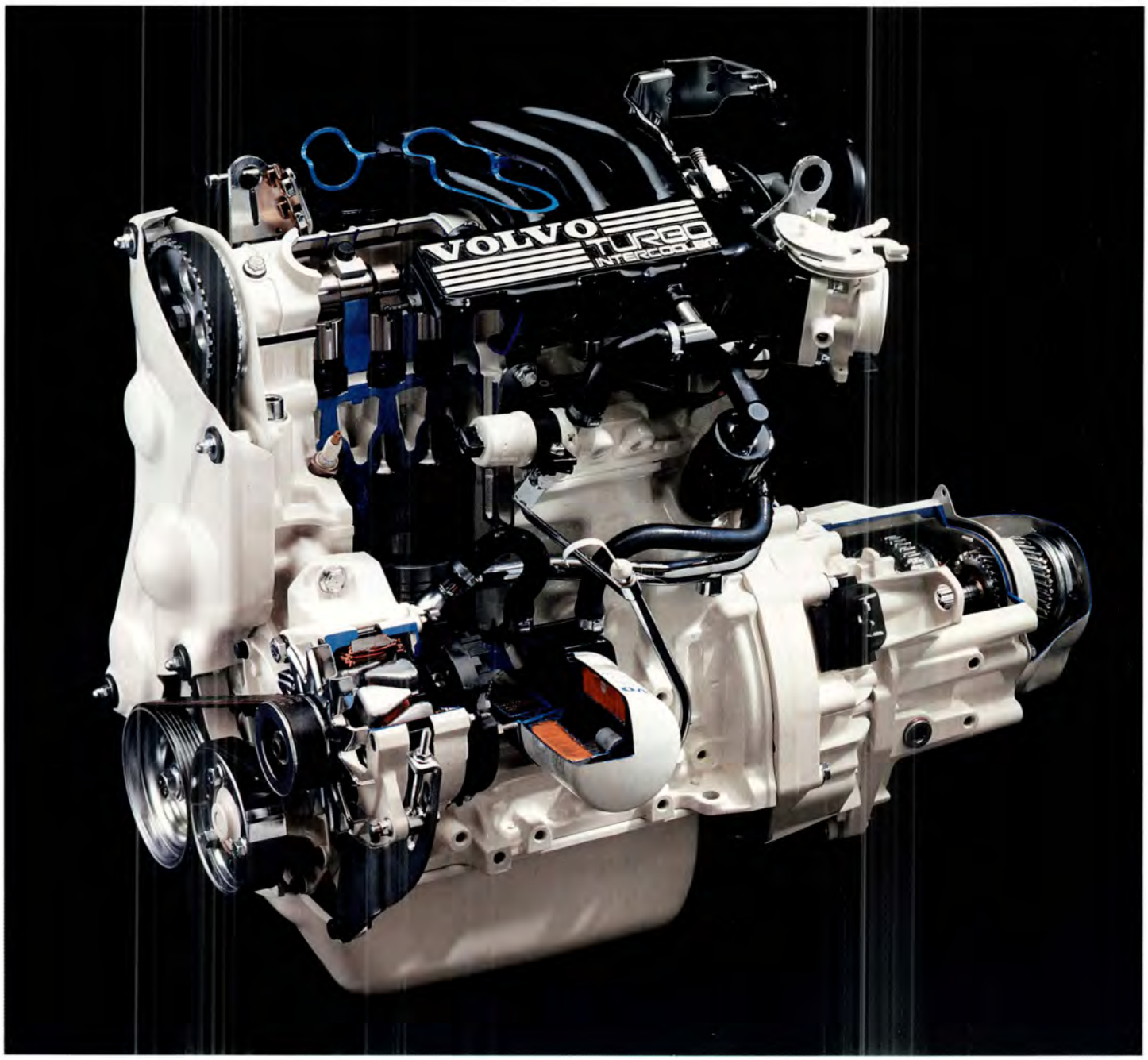
NEW FEATURES COMMON TO THE VOLVO 440 AND 480

New fuel-injection engines. The most important new features for the 1990 Volvo 400 Series are two new engines, the result of a major redesigning of our present normally-aspirated fuel-injection engines.

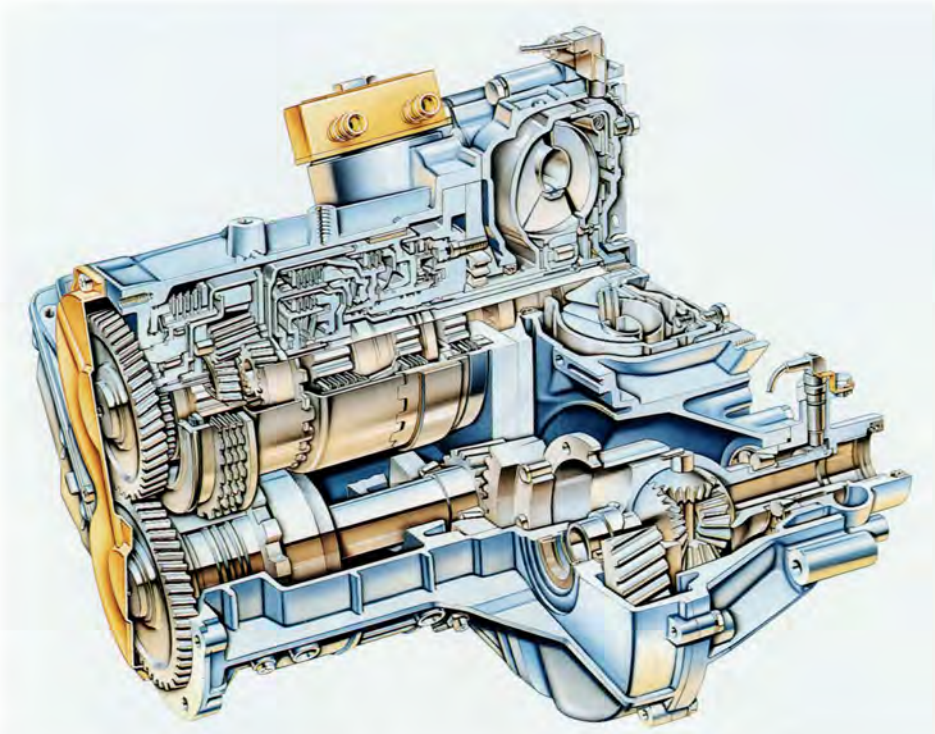
The new engine variants have the same basic configuration as the current engines: a 1.7-litre block, Heron head, etc. The designations for these engines are "B 18 EP" and "B 18 FP".

Three engines have been withdrawn from the range: the B 18 E, B 18 ED and B 18 F. Thus, we no longer have a fuel-injection engine with an unregulated catalytic converter.

The benefits of these new engine variants can be summed up as follows:
– Both new engines use the same components.



– Smoother idling at all temperatures.
– The output of the FP engine is around 8 kW higher than that of the earlier F engine.
– Considerable improvement in driveability at low speeds in bumper-to-bumper traffic, etc. This is due to an increase in the engine torque in the low to medium speed range.
– The engines have been fitted with a central diagnostic system, for faster fault-tracing and service.
– Finally, the engines no longer resemble a Renault engine in appearance.



Four-speed automatic transmission. A four-speed automatic transmission is available as an option for all fuel-injection and Turbo models in the 400 Series.

The transmission has a 60% lock-up in third gear and a full lock-up in fourth (high) gear, to provide performance and fuel consumption comparable to those of engines fitted with a manual gearbox.

Modified Turbo. The Turbo engine has been fitted with a different type of camshaft and the boost pressure has been modified, to increase the performance and torque at engine speeds below 2000 rpm, for better response at the bottom end of the performance curve.

Asbestos eliminated. Asbestos-free gaskets are being introduced. Asbestos, a potential health hazard for mechanics, has thus been totally eliminated on all 300-series and 400-series models.

Environmentally-safe anti-freeze. Volvo is also introducing a new, environmentally-safe anti-freeze.

New upholstery fabrics. The upholstery fabrics currently used in the Volvo 480, 440 GLT and 440 Turbo models will be replaced by a velour fabric with a diagonal pattern, called Multicolour Highlight. This velvety fabric gives the interior of the car an atmosphere of elegance and spaciousness.

The basic design of the seat upholstery has been retained, and the sides and rear of the seats have thus been upholstered in grey imitation leather of high quality. The piping has been eliminated.

Upholstery colours. 480: One colour — Grey Multicolour Highlight. 440 GLT/ Turbo: Two colours — Grey and quartz Multicolour Highlight.

Steering wheel. The steering wheel and the steering column cover of all models are now finished in black instead of beige or charcoal-grey.

Ongoing changes in 1988. Several improvements — the result of requests from the markets and field experience — were introduced during the past model year on an ongoing basis. Here are the most important changes:

- Clutch cable for RHD cars redesigned and rerouted. The operation is smoother and the stick-slip phenomenon is eliminated.
- Modified clutch pedal travel on all cars makes operation easier.
- Front-seat adjustment mechanism redesigned. Positive locking and elimination of rattles.

– Central-locking motors redesigned. Water cannot enter and the system is more reliable.
– Gear sets for the manual gearbox redesigned. They are now manufactured at Volvo's own plant in Sint-Truiden (Belgium) and the quality is higher with less gear noise.
– A new generation of brake pads has been introduced to eliminate brake judder and squeal.
– The section of the A-pillar which carries the door check assembly has been redesigned which gives greater structural strength.
– Potential water-leakage trouble spots have been eliminated.

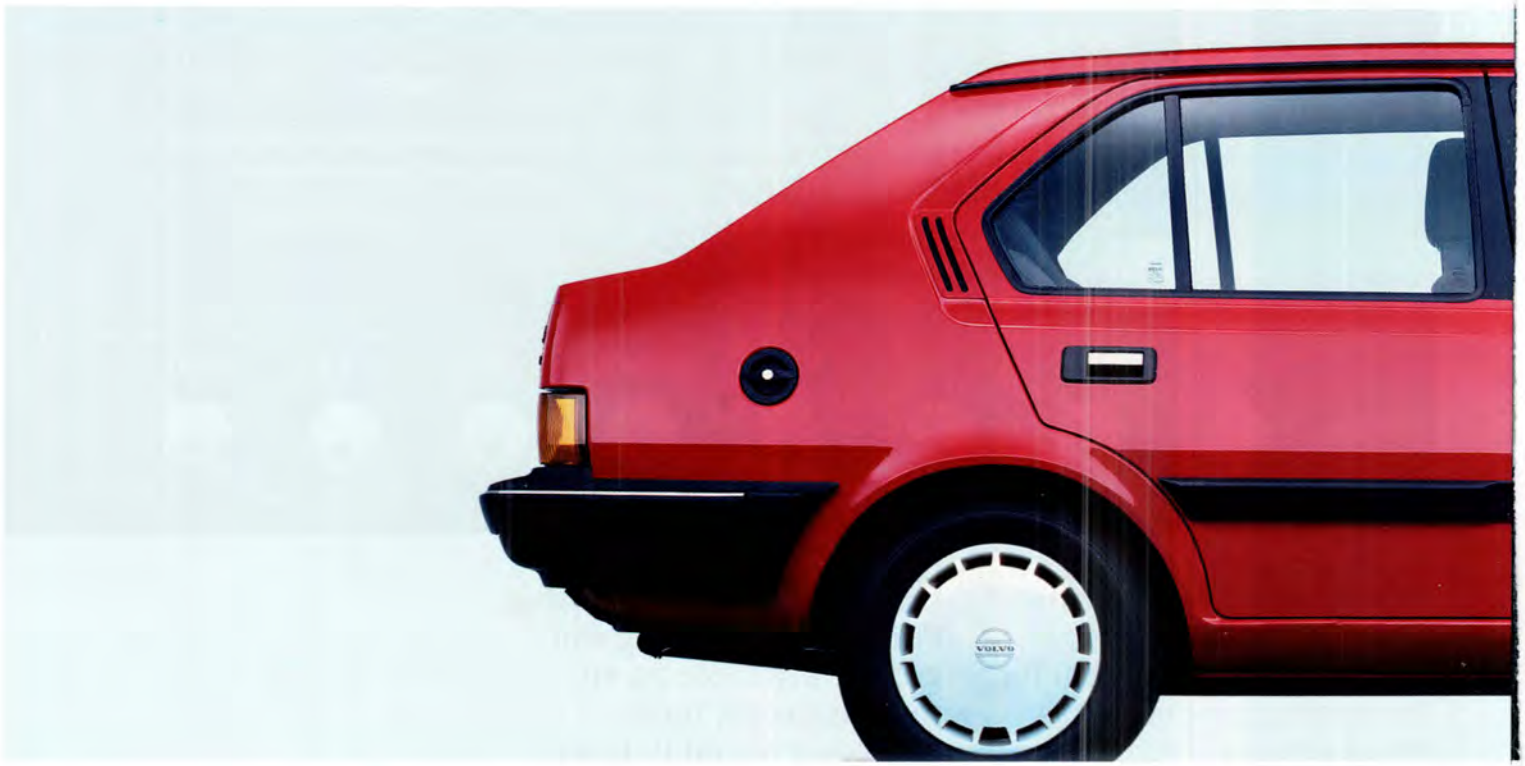
New heating and ventilation system. Another important improvement for the coming model year is the heating and ventilation system, which has been redesigned and upgraded. The changes include a new heater radiator, for better heat transfer, and a fan of higher capacity. The new system can heat the interior and demist the windscreen faster, and it provides a higher stabilized temperature range.

Optional air-conditioning. Full air-conditioning will now be available on all models except those equipped with B 18 K/KD engines.

Volvo 340

360 models to be withdrawn. To prevent internal competition within the Volvo sales programme the Volvo 360, with its 2.0-litre engine, will be withdrawn as from AT 89.

However, this is not the end of the well-established 300 Series by any means. The 340 will continue to be sold in three-door and five-door hatchback and four-door sedan variants with a choice of three engines: the thoroughly-tested 1.4-litre and 1.7-litre carburettor engines, and the 1.6-litre diesel.



Transmissions. The five-speed manual gearbox is fitted as standard to all 340 models, and the CVT—the automatic transmission selected for the car many years ago—will still be available as an option on the 1.4-litre variants.

The tried-and-tested 340 comes as close to perfection as any car can be after 12 years of production, refinement, continuous improvement and modernization.

The 340 range for 1990
– Three body variants (three-door and five-door hatch-backs and four-door sedan)
– Two specification levels (DL and GL)
– Three engines (1.4 and 1.7-litre petrol, and 1.6-litre diesel)

VOLVO

Volvo Car Corporation/Volvo Car BV

MS/PV 2712-89 Broberg Eklind AB Printed in The Netherlands