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Press Information

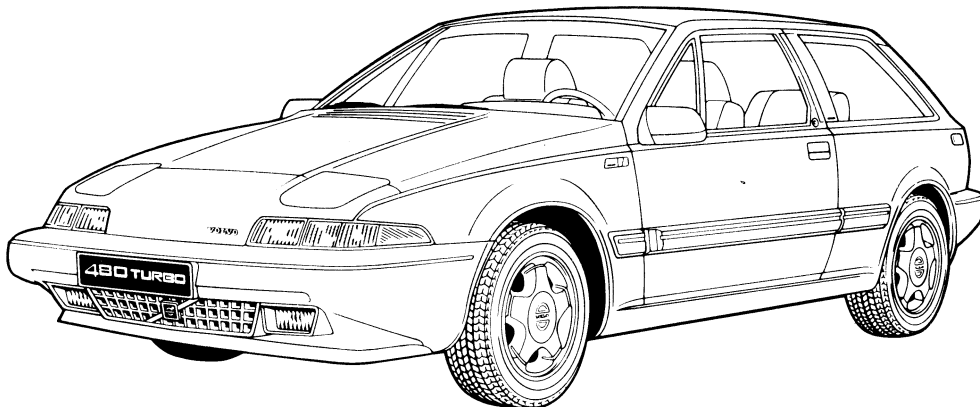
VOLVO 480 RANGE

The Volvo 480 range presently comprises two models - 480 Turbo and 480 ES - and a five-engine power choice. Depending upon the market variants, the Volvo 480 ES is available with a choice of three engines. The B18F, equipped with a three-way catalytic converter and Lambda sensor control, delivers a maximum output of 70 kW at 5400 r/min and gives the car a top speed of 180 km/h. The B18ED has a catalytic converter without Lambda sensor control. Maximum power is 78 kW and top speed is likewise 180 km/h. The variant without a catalytic converter - the B18E - powers the fastest 480 ES and offers a top speed of 185 km/h with a maximum output of 80 kW.

The Volvo 480 Turbo, Volvo's range leader in the 480 line-up, is available with two engine variants. One with a three-way catalytic converter and Lambda sensor the B18FT, the other without a catalytic converter for countries where unleaded petrol is not generally available (the B18FTM). The car is not in the first place designed for extravagant road performance. The B18 Turbo engine - with its watercooled turbocharger, electronic boost control and intercooling - primarily enhances the dynamic safety of the car. The turbocharger makes it possible to respond quickly when overtaking as well as enhancing driving pleasure while still retaining the Volvo comfort, durability and reliability.

With the arrival of the Volvo 480 Turbo, Volvo introduces a car for the group of motorists who wish to express their individuality and at the same time stand out from the crowd. People who like cars with a distinctive styling, a dynamic charisma and sporty performance - all with a certain elan. Yet without making the slightest concession to the stringent criteria which determine the Volvo standard.

The new Volvo 480 Turbo has been developed for a young public. Men and women between 25 and 40, generally with a higher than average education and with career ambitions. People with an individual lifestyle who actively participate in sport and recreation in their leisure time, who are sensitive for fashion changes, are interested in culture and like to enjoy the good things in life.



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The car is characterized by the following properties:

- Modern and compact concept with front wheel drive and a sleek, low body line.
- Inviting and tastefully appointed interior with distinctly sporting overtones.
- Comfortable accommodation for four adults.
- High level of comfort and driving pleasure.
- Complete and comfortable standard equipment package.
- Well-endowed with sophisticated electronics.
- Sporty performance.
- Very respectable fuel economy.
- Only 10 hours maintenance required in the first 100,000 km, including oil changes.
- Eight years Corrosion Protection Warranty covering rust and corrosion from within.
- Built to the traditional Volvo standards of quality, safety, comfort, durability and reliability.

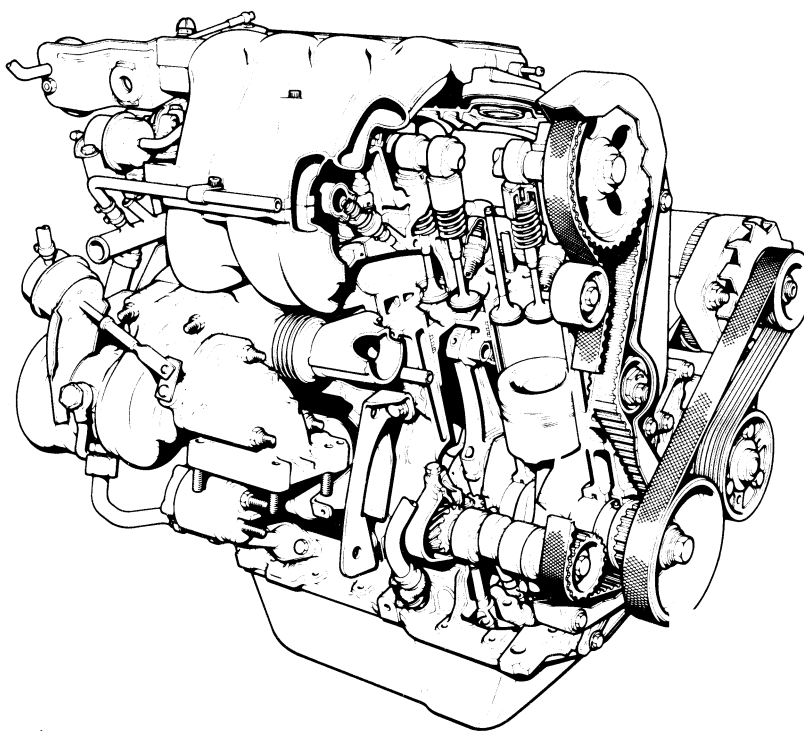
In brief, all the properties that appeal to the group of motorists who wish to express their individuality and at the same time stand out from the crowd.

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Turbo-power à la Volvo

The design concept of the B18 Turbo is not based on outright top-end power. Instead, the emphasis has been placed on enhanced torque through the gears, particularly in the lower engine speed band. This emphasis on low-end torque and extra overtaking performance in the vital mid-range is fully in keeping with the Volvo philosophy of dynamic safety and driving pleasure. And by reason of the sophisticated technology by which this is achieved, no sacrifices whatever are made in respect of the comfortably low noise level when accelerating, nor with regard to the reliability and longevity of the engine or turbocharger unit. Equally important are the good fuel consumption figures obtained with both variants of the Volvo 480 Turbo.



Equipment

Starting with the very full equipment of its sister model, the 480 ES, the Volvo 480 Turbo has an even more complete package. This embraces colour-matched bumpers, an extra deep front spoiler, twin fog lights and a dash-mounted turbo boost gauge, entrance lights left and right front. There are Turbo decals on the lifting tailgate and on both B-pillars. Options include air-conditioning, ABS, headlight jet-wash, metallic paint, a lifting moonroof and leather upholstery.

Technical summary

The base engine in the Volvo 480 Turbo is the 1.7-litre cylinder block introduced with the 480 ES. It is a relatively high compression Heron head unit, featuring an intercooler to optimize power output and fuel consumption, and a small diameter watercooled turbocharger with electronic boost pressure control. An oil cooler is standard while additional cooling systems are provided for fuel system components and the engine plus the turboshaft bearings to eliminate all possibility of post-driving heat soak problems.

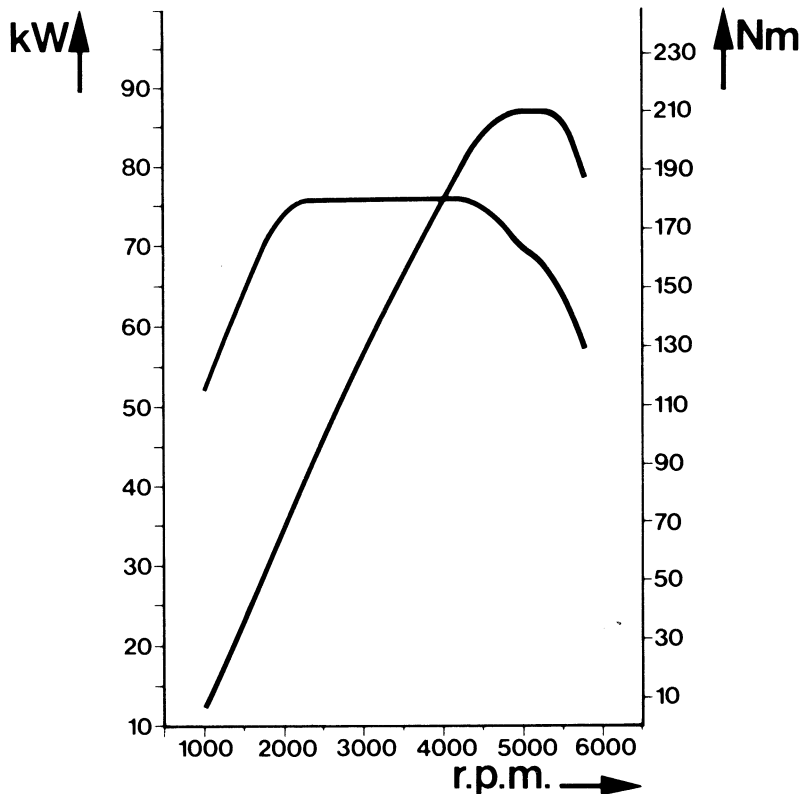
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The three-way catalytic converter variant satisfies the stringent exhaust emission requirements of US83. The end result - both in catalytic converter and non-catalytic form - is a smooth-running engine with high torque at low revs and without turbo-lag, offering fast response and enhanced comfort at the wheel.

The technology

The engine for the new Volvo 480 Turbo is a watercooled 4-cylinder unit with a cubic capacity of 1721 cc and a compression ratio of 8.1:1. It is equipped with a watercooled turbocharger with electronic boost control and intercooling. Maximum power is 88 kW/120 hp at 5400 r/min while torque peaks at a very healthy 175 Nm. Maximum torque is available from low down the engine speed band (1800 r/min) in both the catalytic converter and non-catalytic variants.



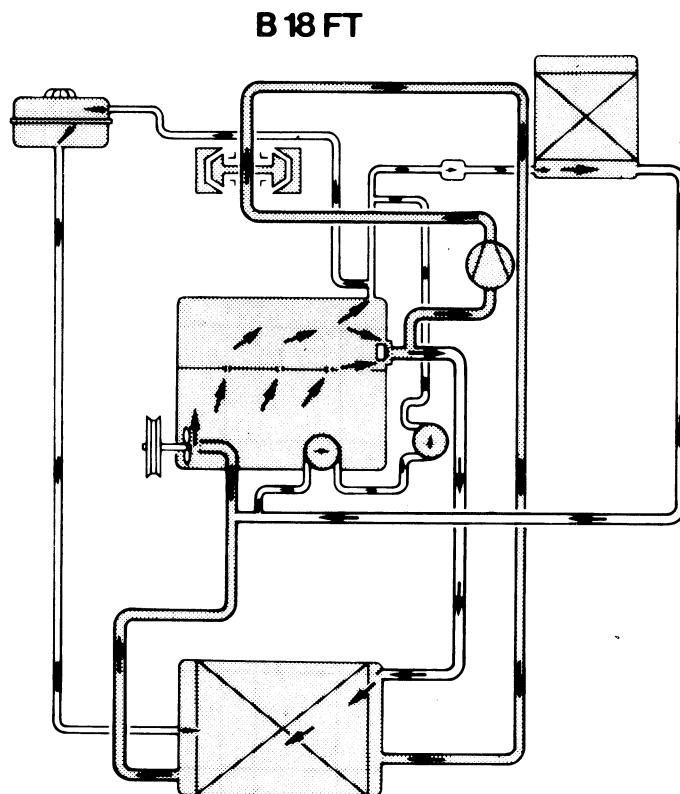
Power-and Torque curves of Volvo 480 Turbo

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Watercooled turbocharger

To eliminate the risk of overheating damage to either the turbocharger or the cylinder block/cylinder head, watercooling is used for the turboshaft bearings. This cooling continues by means of a separate electric water pump, actuated by cylinder head temperature, located in the cooling circuit of the turbocharger and the cylinder head. It guarantees a flow of coolant, if required, after the engine has been switched off and even when the key is withdrawn from the ignition switch. This rapidly cools the engine and turboshaft bearings down to acceptable values and eliminates the heat soak problems that can affect other (water cooled) turbochargers and in many cases ultimately result in bearing seizure. An enhanced life is also obtained for many of the engine components, while there is no need - as with many other turbocharged engines - to let the engine run at idle for a few minutes to give the turbo time to cool down.



Turbo-Cooling Circuit

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Electronic boost control

The B18 Turbo engine is equipped with an electronic boost pressure control unit with both a protective and an active function.

Use is made of a mechanical wastegate with a low threshold setting of 0.28 bar. Via a proportional valve, part of the boost pressure is admitted behind the wastegate. This raises the boost pressure. Thanks to the electronic control used on the 480 Turbo, a virtually flat torque curve is obtained without the uncomfortable turbo-lag phenomenon.

In its protective role, the electronic boost pressure unit limits the boost pressure to an upper design ceiling and will even cut off the fuel supply if a situation occurs which threatens to damage the turbocharger or the engine. It takes similar protective action in the event of engine overheating or persistent or severe knocking, by retarding the ignition and lowering the boost pressure.

The active boost pressure function consists in obtaining the highest possible torque at the bottom end of the engine speed band, and obtaining a virtually flat torque curve over the widest engine speed range possible. In practice, this means that maximum torque of 175 Nm is available from 1800 r/min and is sustained up to 4600 r/min.

Small diameter turbocharger

By combining this electronic turbo boost system with a small diameter (2") turbocharger, Volvo's design engineers have succeeded in eliminating the traditional turbo-lag phenomenon. In a turbocharged car, the absence of this 'delayed action' acceleration is very noticeable and contributes greatly to the comfort of the occupants and to the sense of security experienced at the wheel of the Volvo 480 Turbo.

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Intercooling

The Volvo 480 Turbo is equipped with an intercooler in order to obtain the best possible ratio between fuel consumption and available power and - with a keen eye to engine longevity - to keep the combustion temperature within the design limits.

Extra cooling fan for fuel system

The B18 Turbo engine on the Volvo 480 Turbo has an extra cooling fan, actuated by a thermal switch in the cylinder head, which provides additional cooling of fuel system components which are exposed to possible heat soak. Air is drawn through the scuttle intake and blown through a special gallery located along the length of the fuel injection manifold and the injectors. In this way, vapour lock due to heat soak is prevented and effortless starting is ensured even in very hot conditions.

Extra engine features

In view of the higher operating temperatures and greater forces set up in a turbocharged engine, the B18 Turbo has several extra features compared with the base 1.7-litre block. These include:

- Sodium-filled exhaust-valves for enhanced heat dissipation.
- Additional stiffening ribs in the cylinder head.
- Additional damping volume in the inlet manifold to equalize the boost pressure.
- A single coupling between the turbocharger outlet and the exhaust pipe. This Ø 57 mm coupling absorbs both vibrations and larger displacements of these components.
- Exhaust manifold consisting of a single cast iron gallery between the cylinder head and the turbocharger intake.

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Engine Management System

The Engine Management System consists of three separate units - microprocessor controlled - for the ignition, the injection and the boost pressure. These units are interactive and together ensure optimum performance and fuel consumption in all operating conditions:

- Electronic ignition mapping system
 - Electronic boost control.
 - Multipoint fuel injection (hot-wire system)
-] combined in one housing.

In illustration of their interactive operation, after a cold start and during the warming up period both the ignition timing and the quantity of injected fuel are continuously adjusted for optimum performance and driveability with minimum fuel consumption.

Knock sensor

The B18 Turbo has a built-in knock sensor to prevent possible pinking damage to the engine caused by inferior grade fuel. Each cylinder is separately regulated by this anti-knock control system

If excessive detonation occurs in one or more cylinders, the knock sensor will immediately retard the ignition. If this is not sufficient to eliminate the detonating phenomenon, the boost pressure will also be reduced until a normal situation is reached again.

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Anti-lock Braking System

Down the years Volvo has consistently introduced new passive and active safety features designed to provide the best possible protection for drivers and passengers. To raise the dynamic safety level even more, an anti-lock braking system has been developed for the Volvo 480. This ABS is ideally matched to the high-tech concept of the car. Four sensors are used to monitor the speed of each wheel and provide almost instantaneous feedback to the electronic control unit. The hydraulic pressure is regulated in 3 different brake circuits (the front wheels separately plus the rear axle) for optimum braking effect. Together with the almost perfect balance offered by the standard suspension and braking system of the Volvo 480, this Volvo developed ABS raises the active safety level on slippery surfaces to a new high. Much attention has been devoted to obtaining good feedback of the braking effort via the brake pedal, so that the driver is always aware of the driving conditions. This is complemented by the automatic self-correcting action of the front axle (kidney shaped apertures in the lower wishbone flexible bushes). Together with the ABS, this provides an incredibly stable braking behaviour in all driving conditions and for all drivers, because no special skills are required to brake safely with this anti-lock braking system.

The new ABS from Volvo has many advanced features which will not be found on most other contemporary systems. Its forefront electronics include a computerized self-diagnostic system which has details of static and dynamic failures stored in the electronic control unit's memory. This information can be read in the workshop by means of a special connector and a flash code. Furthermore every 10 seconds the electronic control unit automatically tests the electric and electronic systems of the ABS. The rear wheel speed is used as a reference for the ABS function on the front wheels. The Volvo 480 ABS also features an extrapolation facility. This enables the ABS computer to take advance action to control the wheel speed and eliminate the typical zig-zag progression in a curve.

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FUEL CONSUMPTION AND PERFORMANCE FIGURES

Volvo 480 Turbo

Motor: B18 FT with three-way catalytic converter	B18 FTM non-catalytic converter
Design: RON 95 Euro-super** (lead- free)	RON 95 Eurosuper** (and lead)

According to FTP 75.
 B18 FT and B18 FTM same results

City	9,9 l/100 km
Highway	6,4 l/100 km
Combined	8,3 l/100 km

According to ECE R15-04
 B18 FT and B18 FTM same results

Urban cycle	11,0 l/100 km
90 km/h	6,3 l/100 km
120 km/h	8,1 l/100 km
Average	8,5 l/100 km

B18 FT and B18 FTM same performance
 figures

Maximum speed	200 km/h
0-100 km/h	9.0 sec
80-120 (3rd gear)	6.2 sec
80-120 (4th gear)	8.5 sec

Volvo 480 ES

B18 F with three- way catalytic converter	B18 E	B18 ED unregulated catalytic converter
RON 91 lead-free	RON 95 lead and lead-free	RON 95 Eurosuper lead-free

Results not
 available

B18 E and B18 ED
 same results

10,4 l/100 km
5,6 l/100 km
7,0 l/100 km
7,7 l/100 km

180 km/h	185 km/h	180 km/h
10.5 sec	10 sec	10 sec
—	—	—
10.5 sec	9.5 sec	9.5 sec

* Volvo computed figures

** Leadfree RON 91 may be used of short duration but performance will be lower

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STANDARD & OPTIONAL EQUIPMENT	480 TURBO	480 ES
Tinted glass	●	●
High impact laminated windscreen	●	●
Halogen pop-up headlights	●	●
Long-range lights	●	●
Front fog lights	●	—
Rear fog warning lamps	●	●
Reversing lights	●	●
Engine compartment illumination	●	●
Luggage compartment illumination	●	●
Impact resistant bumpers - withstand impacts up to 8 km/h without damaging the panelwork or the bumpers	●	●
Central locking	●	●
Power windows front	●	●
Electrically controlled and heated door mirrors	●	●
Anti-theft alarm	●	●
Driver's door keyhole light	●	●
Interior light with time delay	●	●
3-point inertia reel seat belts front and rear	●	●
Seat belt reminder	●	●
Electrically heated front seats (some markets)	●	●
Height adjustable driver's seat	●	●
Adjustable steering column	●	●
Adjustable lumbar support on front seats	●	●
Adjustable head restraints front	●	●
Adjustable backrest on rear seats, split rear seats for versatile load capacity	●	●
Lockable and illuminated glove box	●	●
Oddments box/armrest front and rear	●	●
Remote controlled fuel cap	●	●
Remote controlled tailgate	●	●
Electronic Information Centre	●	●
Search-find switch illumination	●	●
Headlight warning buzzer	●	●
Rheostat controlled dashboard illumination	●	●
Intermittent wipe (continuous at full throttle)	●	●
Intermittent wipe rear (continuous in reverse gear)	●	●
Automatic wash/wipe combination front and rear	●	●
Rev counter	●	●
Oil pressure gauge/voltmeter/turbo boost gauge	●	—
Colour-matched bumpers	●	—
Metallic paint	○	○
Headlight jet-wash	○	○
Air-conditioning	○	○
Leather upholstery	○	○
Moonroof	○	○
ABS	○	○

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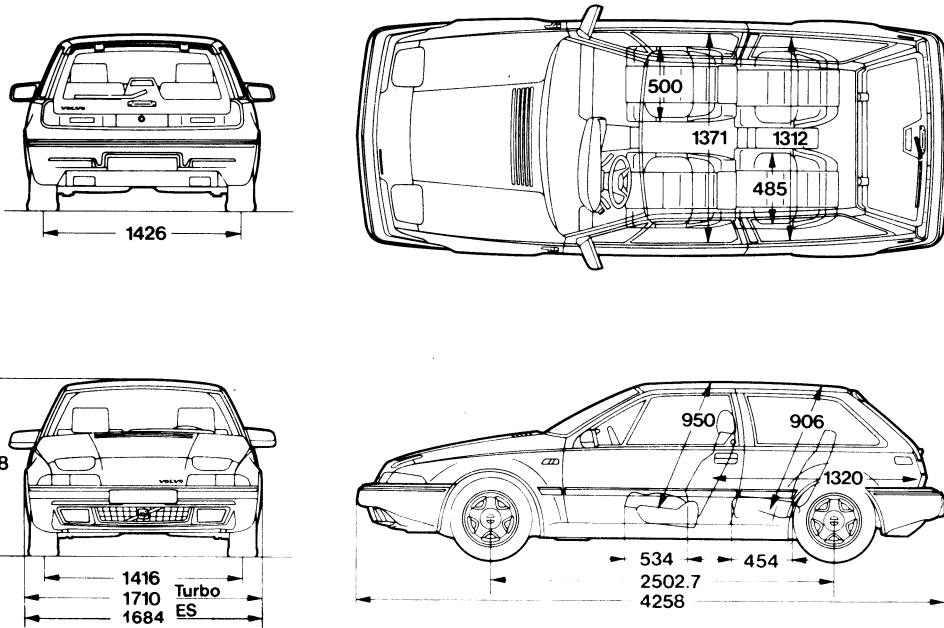
- = Standard equipment
- = Optional equipment at additional cost
- = Not available

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Weights and dimensions

Dimensions in mm:



Weights:

	480 Turbo Motor B18FT, B18FTM	480 ES Motor B18E, B18ED	480 ES Motor B18F
Maximum permitted weight	1415 kg	1390 kg	1385 kg
Kerb weight	1040 kg	1012 kg	1016 kg
Permissible roof load	50 kg	50 kg	50 kg
Luggage compartment capacity (by SAE measurements) variable between	160-660 litres	160-660 litres	160-660 litres