CONTINUED SALES INCREASE FOR VOLVO STATION WAGONS

Volvo is consolidating its position as one of the leading manufacturers of station wagonsin the world. Sales during 1982 obtained 68,000 units, that is to say about one third of the 240 range sales. In spite of the fact that the car market is situated throughout the world, Volvo has reinforced its market penetration in its particular sector, in Europe, at more than 30%.

Volvo stationwagons are particularly successful in Great Britain. Volvo has noted more than half the stationwagon sales in its sector.

The Volvo five-door versions are so popular in Great Britain that the 265 - the luxury station wagon powered by the six-cylinder B28 engine - remains in production for this market alone. Otherwise it has been phased out.

In Austria, every fifth station wagonsold in this class was a Volvo. In Belgium every fourth unit.

This make dominates completely on the Swedish market.

In the United States and the Netherlands, there is a very high demand for Volvo station wagons.

Sales figures furthermore show that the fast and sporting GLT and Turbo models are becoming increasingly popular.

A wide range

Volvo station wagonscover a very large range of models from which the customer can choose cars with engines, equipment and a comfort level to suit varying demands and personal tastes. The wide range available makes it very successful on the markets.

Station wagons are difficult to beat as family cars. They have the same high standard as a limousine from the viewpoint of comfort, road-holding, safety and quality but the station wagon offers considerably more capacity for luggage. Indeed it can accept 1.2 cubic metres and this figure can be increased to as much as 2.1 cubic metres if the rear seat is dropped.

Furthermore, accommodation is also available under the smooth floor at the rear, capacity 60 litres, and very suitable for the stowage of small things, rugs, an extra child seat, etc.

One particular feature in the design of the rear door is the hinge attachment. The hinges are located above the roof of the car. This means that loading height can be used to a maximum and the hinges do not get in the way. Another practical feature is the location of the spare wheel vertically behind a cover on the left-hand side of the cargo area. This makes the spare wheel easily accessible.

Special attachments for lashing the load in the cargo area are standard. Extra accessories available include a practical load "toboggan" to facilitate the loading and unloading of goods.

A wide range of equipment

Interior upholstery are plush, woven material or leather is matched on certain markets with colour-adapted dashboards and door upholstery to provide the purchaser with a wide range of choice whereby he or she can compose the desired colours.

Options available include air-conditioning, electrically operated rear view mirrors, electric window lifts, central locking, differential brake and metallic finish.

The engine range

The Volvo station wagon programme covers several engine models in order to provide various requests concerning performance, economy and temperature and also the different legislative demands and regulations on various markets.

The B19, B21 and B23 engines in different versions provide outputs from about 66 kW at 92 r/s (90 hp at 5,500 r/min) to 114 kW at 92 r/s (155 hp at 5,500 r/min) in the case of the turbo versions.

The top-performance model among the station wagon is the Volvo Turbo. This is a very versatile vehicle built for fast and comfortable long-distance driving. It has a top speed of about 200 km/h and accelerates from 0 to 100 km/h in 9 seconds, this making it one of the fastest station wagons in the world.

It is powered by the Volvo four-cylinder, 2.1 litre B 21 ET engine with fuel injection and turbocharging. This unit develops 114 kW at 92 r/s (155 hp at 5,500 r/min) and has a torque of 24.5 kpm at 3,750 r/min.

The chassis, suspension and transmission are adapted to the extra engine output. The Volvo Turbo, for example, is fitted with gas shock absorbers on the front suspension, special stabilizers and also low-profile tyres fitted to special aluminium wheels.

The GLT with resources

The Volvo GLT can be obtained with a four-cylinder B 23 E engine. This well-equipped station wagon has both output and speed resources which make it a versatile and very useful car.

A fuel-thrifty six-cylinder diesel

The Volvo D 24 engine is the first series-built six-cylinder diesel engine for cars in the world. The Volvo diesel differs from traditional diesel engines primary through its turbulence chamber and the cogged belt driven overhead camshaft which makes the engine almost as quiet and vibration free as a petrol unit. This diesel develops 60 kW at 80 r/s (82 h.p./4,800 r/min) and is a powerful and economical model in the station wagon family.

LPG

In some countries operation on LPG (Liquid Petroleum Gas) provides an interesting alternative fuel. All Volvo station wagons fitted with petrol engines, with the exception of Turbo unit, can be equipped for LPG operation.

THE WIDE VOLVO TURBO RANGE

The sophisticated Volvo turbo-engines for cars are available in three basic versions: B21ET, B23ET and the turbocharged six-cylinder diesel with designation TD24. But turbocharged engines are by no means new. The first patent appeared as far back as 75 years ago. Volvo was the first company in the world to utilize an exhaust-powered turbo compressor commercially. This was in 1954 when the first Volvo trucks with turbocharged diesel engines were delivered.

What is an exhaust-powered turbo

Expressed in a simple way, it consists of a turbine rotor that is rotated by the engine exhaust gases. Directly attached to the turbo rotor there is a compressor which feeds air under pressure to the engine intake system.

The turbo is also fitted with a bypass valve (wastegate) which regulates the exhaust gases that pass through the turbine blades. It also regulates the speed of the turbine and thereby also the degree of supercharging.

Output when it is needed

The extensive experience of turbo technology acquired by Volvo is based on earlier skill from the production of heavy vehicles. The solution chosen by Volvo for the car range provides many advantages.

The turbo unit with its integrated wastegate has a control system which makes up part of the turbo itself. This ensures a compact design which starts supercharging even at low engine speed and provides an engine that responds directly to pressure on the accelerator.

The turbo system provides the driver with excellent output control. If the accelerator pedal is pressed carefully, not so much of the degree of supercharging is taken into use and, when full output is really needed, all you have to do is to press down the accelerator pedal properly. The turbo technology also provides other valuable characteristics such as cleaner exhaust emissions, good fuel economy and a low noise level.

Three basic engines

The wide Volvo turbo range has been developed to meet all demands on performance and economy. One joint target for all the engines has been to create a turbo with a high torque, primarily in the medium engine speed range. This means that the turbo must be dimensioned in such a way that the exhaust gases are able to drive the turbine sufficiently hard at these engine speeds.

B21ET

The B21ET is the well-known Volvo four-cylinder, 2.1 litre engine with turbo-charging and fuel injection. It includes a cross-flow cylinder head made of aluminium and a belt-driven overhead camshaft. The crankshaft is carried in five bearings. There is also an electronically controlled breakerless ignition system.

This engine has also been adapted to meet the demands from different markets. In the USA, for example, Volvo has developed a B21FT engine specially designed for use on lead-free fuel and adapted to the unique Volvo exhaust purification lambda sond which radically reduces exhaust emissions to a minimum.

In Italy, Volvo has decreased engine capacity slightly and here offers a B19ET engine.

Engine designation	B 21 ET
Type of engine	In-line, four-cylinder
Engine capacity, c.c.	2127
Max output, kW DIN at r/s	114/92
(hp DIN at r/min	(155/5500)
Max torque, Nm DIN at r/s	240/63
(kpm DIN at r/min)	(24.5/3750)
Compression ratio	7.5:1
Valve system	Cogged belt driven overhead camshaft
Bore	92 mm
Stroke	80 mm
Fuel system	CI injection
Octane rating	98
Turbocharging system	Exhaust-powered turbo-compressor (Garrett Air Research TB 03) with integral wastegate valve

B23ET

The B23ET is the second generation of turbocharged petrol engines. The new unit has a capacity of 2.3 litres and develops 173 hp at 5,700 r/min. The B23ET is fitted with an intercooler. This charge air cooling system reduces the temperature of the air that has been compressed and heated in the turbo unit. The cooled air has a higher density and thereby includes more oxygen. Together with the fully-electronic fuel and ignition system, the best output is obtained since the optimum amount of fuel is continuously available for combustion.

Engine designation	B 23 ET
Type of engine	In-line, four-cylinder
Engine capacity, c.c.	2316
Max output, kW DIN at r/s	127/95
(hp DIN at r/min)	(173/5700)
Max torque, Nm DIN at r/s	250/57
(kpm DIN at r/min)	25.5/3400)
Compression ratio	9.0:1
Valve system	Cogged belt driven overhead camshaft
Bore	96 mm
Stroke	80 mm
Fuel/ignition system	Bosch DME-L (Motronic)
Octane rating	98
Turbocharging system	Exhaust-powered turbo-compressor (Garrett T03) with integral wastegate valve

TD24

The Volvo TD24 six-cylinder diesel developing 109 hp at 4,800 r/min is one of the fastest car diesels in the world providing acceleration from 0 to 100 km/h in 12.5 seconds in the Volvo 760 GLE. The TD24 has very high torque throughout the whole of the low and medium engine speed range. Very high torque - 19.4 kpm - is reached at as low an engine speed as 3000 r/min.

The turbo diesel has been developed from the well-tested Volvo in-line six-cylinder diesel and has been modified concerning the following points:

- Better piston cooling to compensate for the higher level of heat loading
- A more efficient oil pump for better oil flow capacity
- A more efficient fuel pump

Engine designation	TD24
Type of engine	In-line, six-cylinder
Engine capacity, c.c.	2383
Max output kW DIN at r/s	80/80
(hp DIN at r/min)	(109/4800)
Max torque, Nm DIN at r/s	190/50
(kpm DIN at r/min)	19.4/3000)
Compression ratio	23.0:1
Valve system	Cogged belt driven overhead camshaft
Bore	76.5 mm
Stroke	86.4 mm
Fuel system	Diesel
Octane rating	Diesel
Turbocharging system	Exhaust-powered turbo-compressor (Garrett TA0307) with integral wastegate valve

The computer-control VCCT engine

The new experimental Volvo engine VCCT (Volvo Computer Control Turbo) is the latest example of the way in which Volvo technicians are developing energy-effective engines with extremely good performance. The new VCCT engine has charge air cooling and micro-computer control which provides 40 extra horse-power and develops 198 hp during acceleration.

The VCCT engine is a prototype based on the B21ET. Starting with this unit, the application of micro-computer technology and a further development of supercharging technique has resulted in an engine with better response and higher torque. Over short periods the torque can be increased by up to 25% during acceleration and tests show that fuel economy has improved by more than 15%.

Engine designation: VOLVO VCCT

Type of engine	Four-cylinder, in-line, liquid-cooled injection engine with turbocharging and charge air cooling
Engine capacity, c.c.	2,127
Continuous output	155 hp DIN/5400 r/min (114 kW/90 r/s)
Maximum output	198 hp DIN/5400 r/min (146 kW/90 r/s)
Torque	26.5 kpm/3200 r/min (260 Nm/53 r/s)
Max torque	33.6 kpm/3200 r/min (330 Nm/53 r/s)
Compression ratio	8.5:1
Charge pressure	0.65 bar/3500 r/min
Maximum charging pressure	0.97 bar/3500 r/min

Performance (attained with a VCCT engine fitted in a standard Volvo 244 Turbo, 1981 model)

Acceleration	0 to 100 km/hr = less than 8 seconds; 90 to 140 km/hr = 9.6 seconds (in 4th gear)
Top speed	more than 200 km/hr
Fuel consumption	0.96 litres/10 km mixed driving according to guide-lines laid down by Swedish Consumer Authority

VOLVO SALES INCREASED ON SHRINKING CAR MARKET

More than 317,000 Volvo cars were sold during 1982. This was the best sales figure ever noted. Sales of Volvo 240 and 760 series cars reached 227,000, an increase of 9% from 1981. Sales of the 300 series increased by 15% to reach 90,255 units.

The excellent sales result must be viewed against the background of the fact that the world market decreased for the fourth year running. However, a recovery can be noted during the year.

This becomes most apparent in the United States. There, sales at the beginning of the year were about 20% below the level of the previous year. Towards the end of the year recovery became so noticeable that the total car sales figures for 1982 finished up only a few percent behind those in 1981.

The United States clearly maintained its position as the largest individual Volvo car market. The new sales record is rather more than 72,000 units, an increase of 13% compared with the previous year.

On the North American market, that is to say in the USA, Canada and Puerto Rico, the total number of cars sold during the year was almost 80,600, an increase of 11%.

In Europe, sales increased on the British, Swiss, Belgian, Dutch, French, Italian, Spanish, Portuguese, Sweden and Norwegian markets. Portugal (+32), France (+29), Sweden (+23), Belgium (+20), Italy (+14) and Spain (+13) were responsible for the largest sales increases in the extensive Volvo car range.

The largest market in Europe for Volvo was Sweden with almost 49,600 vehicles sold in the 240 and 760 ranges. Sales increased by 23%. Including the 300 series, the number of Volvo cars sold in Sweden was 60,400.

Station wagons move up

1982 was also an excellent year for Volvo station wagons. This type of vehicle, well established on most markets, reinforced its position in many cases as a leader on the market.

Almost one third of the cars sold by the Volvo Car Corporation were station wagons.

The five-door range is particularly in demand in Great Britain. 48% of the sales of large Volvo cars in this country consisted of station wagons.

In Sweden, the corresponding percentage is 38, in Norway 38, in Switzerland 35, and in Canada, Ireland, Denmark and the USA about 28.

Turbocharged petrol engines top list in USA

Volvo sold more than 10,200 turbo petrol cars in the USA. This made Volvo the largest European importer of turbocharged petrol cars. This high performance vehicle is very much in demand in Italy as well.

There has been a positive development in sales of the new Volvo model - the 760 GLE. The demand for this car has been strong on all the Volvo markets. During the last month of the year, the sales rate concerning the new car was about 10% of total sales of large Volvo cars.

The 300 series is a success

During the year Volvo 340/360 models broke a new sales record and passed the 90,000 mark by a clear margin.

The leading markets for the Volvo 300 series are Great Britain where sales increased by 27%, the Netherlands +70%, Sweden +17% and France +10%.

The ten leading Volvo markets in 1982

1.	USA	72,000
2.	Sweden	60,400
3.	Great Britain	51,500
4.	The Netherlands	19,200
5.	Italy	16,200
6.	Germany	12,400
7.	France	11,500
8.	Belgium	9,100
9.	Norway	8,500
10.	Canada	8,200

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