

## VOLVO FIRST IN EUROPE WITH SIX-CYLINDER CAR DIESEL

Volvo is the first manufacturer in Europe to introduce a six-cylinder diesel engine in saloon cars. This engine is now being introduced into the company 240-series and is to be used in both four-door cars and station wagons. The diesel version means a significantly larger market for Volvo. During recent years there has been a marked increase in car diesel interest, both in Europe and the USA. Volvo has chosen to give priority to comfort and economy in its diesel version.

The Volvo diesel has an output of 82 horsepower with a swept volume of 2,383 c.c. Torque is 14.3 kpm at 2,800 rev/min and these figures make the car one of the fastest diesels on the market. Its theoretical top speed is 148 km/hour. The time taken to accelerate from zero up to 100 km/hour is 17.5 seconds.

### The swirl chamber

The excellent performance of the engine depends to a great extent on the swirl chamber design. Air is sucked into this chamber in the cylinder head which creates a powerful swirl into which the fuel is injected at high pressure. This ensures a more homogeneous mixture; the engine utilizes every drop of fuel more efficiently.

Ignition of the fuel occurs in the swirl chamber after which the expanding gas enters the cylinder and forces down the piston. The compression ratio of this engine is 23.5:1

### A growing market

Thorough market surveys have provided the basis for Volvo's entry onto the diesel market. The Company has made careful studies of the markets in different countries.

The market surveys indicate that the buyer of a diesel-powered car is characterized by rational thinking and thorough calculations of different alternatives before making a decision to buy. This customer gives priority to overall economy, that is to reliability, lifetime, trade-in value and fuel cost.

#### The typical Volvo customer

This means that the diesel customer is to be found in the same category as normal Volvo customers.

Håkan Frisinger, Managing Director of the Volvo Car Corporation says

"The customers we count on are those who are normally interested in Volvo but since we did not have a diesel earlier, they went to our competitors

#### The Volvo D 24

The diesel - with designation D 24 - installed by Volvo in its cars is made by Volkswagen. Volvo has specified performance and made up the development and test programme for the engine.

Håkan Frisinger: "We found it was cheaper for us to buy the engine from outside. We have carried out continuous development work on diesel engines within the Company. For example we have had six-cylinder diesel engines in our production range on the truck side for many years. The experimental taxi, we presented a couple of years ago was powered by a prototype six-cylinder diesel we had designed ourselves. But when we have a cooperation partner producing an engine meeting our demands, we consider that our customers derive great advantage from co-ordination in this direction".

#### Comfort

In its diesel version car, Volvo has carried out strenuous efforts to obtain an engine that ensured as comfortable travel as possible. In principle a six-cylinder engine is always more free from vibrations than a four-cylinder unit, no matter whether it is petrol (gasoline) or diesel powered. The engine balances better and this has been utilized. The diesel is no longer limited to customers who use their vehicles for commercial purposes.. Today the diesel alternative is also available for those who want more comfortable driving.

## Optimism

The Volvo Car Corporation, a recently established organization including all branches of car activity within the Volvo Group, regards its initiation in a very positive way. The 1979 Volvo models were presented a short time ago. The range included not only extensive exterior changes but also improvements all round concerned with driving characteristics. The result is considerably better dynamic safety.

Volvo also entered the new model year with a better stock situation than through the whole of the 1970's, with top quality and with even more effective production facilities.

Now the range of models has been supplemented with a six-cylinder diesel which will expand the market even more. The manual gearbox 343, also recently introduced, provides Volvo with an even wider basic market, The future is very bright for Volvo with improving market penetration in practically all sectors, this year.

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INTERESTING DESIGN FEATURES IN THE FIRST  
SIX-CYLINDER DIESEL ENGINE FOR CARS

The Volvo diesel engine with designation D 24 is a six-cylinder unit of the swirl chamber type with a swept volume of 2.383 c.c. and an output of 82 horsepower at 4.800 rev/min (DIN). It is the first six-cylinder diesel engine for saloon cars in Europe. Comfort and fuel economy have been given the greatest priority in the development of this unit which is a result of co-ordination with Volkswagen. A high compression ratio, an overhead camshaft and swirl chambers are the design principles chosen to ensure good fuel economy.

Swirl chamber

An interesting design feature of the Volvo diesel is the swirl chamber. This makes up about half the combustion chamber and its function is to rotate the air so that the swirl effect when the fuel is injected makes the fuel mixture as homogeneous as possible. The swirl chambers give the engine greater flexibility and a lower noise level.

The overhead camshaft is responsible for gas exchange which is as rapid as possible. The combustion air must be rapidly evacuated to provide space for new induction air,

Volvo first with a six-cylinder car diesel

Volvo is the first manufacturer in Europe to invest in a six-cylinder diesel engine for saloon cars, The reason for this is to ensure a high level of comfort and convenience. A six cylinder engine is better balanced and means that the car runs more quietly than with a four-cylinder unit.

### An engine with fast acceleration

Volvo has directed its efforts to give the engine acceleration resources which are as good as possible. As a result of this the Volvo 244 GL will also be among the fastest accelerating diesel cars on the market. The performance figure of 0 - 100 km/hour in 17.5 seconds is something that very few competitors can equal today.

The Volvo diesel engine includes many interesting design features. It makes a valuable contribution to the expanding diesel market- an engine with the accent on comfort and convenience. Comfort has earlier been a problem range limiting the market. Now Volvo shows that even a diesel engine can provide a comfortable car and the Company thereby opens up a new segment of the market.

### Data Volvo D 24

Swept volume, c.c.	2,383
Bore, mm	76.5
Stroke, mm	86.4
Output h.p/DIN/rev/min	82/4,800
kW DIN/r/s	60/80
Max torque, kpm/DIN/rev/min	14.3/2,800
Nm DIN/r/s	140/47
Weight	182 kg

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