VOLVO

Press Release

Aug 30, 2010 | ID: 34512

1.6-litre GTDi engines from Volvo deliver high performance and minimal fuel consumption

Volvo's engine range is now being expanded with the T3 and T4, two four-cylinder 1.6-litre petrol engines featuring the very latest direct injection technology.
The GTDi (Gasoline Turbocharged Direct Injection) concept was developed to offer really low fuel consumption without compromising on performance or driving pleasure.

The 1.6 GTDi T3 with 150 horsepower (110 kW) and the T4 with 180 horsepower (132 kW) will be available in the all-new Volvo S60 and V60. The 180 hp engine delivers maximum torque of 240 Newton metres from just 1600 and all the way up to 5000 revs a minute. An on-demand overboost function provides a massive 270 Newton metres of torque. The result is excellent pulling power across the entire speed range. The torque curve is relatively gentle, providing a particularly comfortable driving experience. The 150 hp version offers 240 Newton metres of torque.
"Small, high-performance GTDi engines are a part of our bid to get more energy out of smaller engines," says Magnus Jonsson, Senior Vice President Product Development at Volvo Cars.

Compact aluminium engines with low weight and high energy efficiency
The new GTDi engines have a compact format and are made entirely from die-cast aluminium, which gives low weight and good heat-dissipation capability. These are some of the requirements for good energy efficiency. The plastic inlet manifold also helps minimise weight.
Another precondition is maximum combustion of the fuel. In order to minimise petrol consumption and emissions, the fuel must be utilised as efficiently as possible. The fuel injection system, not least, has been refined so that combustion can be regulated with extreme precision.

Direct injection with spray-dosage multi-hole injectors
For its 1.6-litre engines, Volvo has chosen to position each injector centrally above the piston, just beside the spark plug. The injectors have six holes each, somewhat unusual for centrally positioned injectors. This gives particularly uniform and finely atomised fuel distribution.
The centrally located multi-hole injector makes it possible to control fuel dosage extremely precisely. In cold starts, the fuel is sprayed into the middle of the combustion chamber just prior to ignition. The high fuel injection pressure of 100 bar means that preparation is perfect and less fuel ends up on the cold combustion chamber walls. This helps cut emissions and considerably reduces the amount of fuel consumed. Another effect is a major reduction in the amount of soot particulates compared with a side-positioned injector.
In cold starts, this injection technology also contributes to quick heating of the catalytic converter, which in turn hastens the exhaust cleaning process.
Direct injection gives a high fill rate in the combustion chamber. Apart from effective combustion and low emissions, this also helps the turbo start up earlier and provides swift response even from low engine revs. This in turn promotes fast acceleration and good driveability from low speeds.
"This is the most modern injection technology in existence and Volvo played a major role in its development," says Magnus Jonsson. "Our cooperation with Bosch, which manufactures the system, has been ongoing for a number of years and is highly successful."

Turbo and twin VVT (Variable Valve Timing)
Direct injection in combination with turbocharging and variable valve timing has made it possible to

deliver performance properties on a par with far larger engines, while at the same time reducing fuel consumption and environmental impact to considerably lower levels.
"We estimate reductions in fuel consumption and exhaust emissions in the region of twenty percent compared with a conventional petrol engine with larger displacement and similar performance," says Magnus Jonsson. "At the same time, the GTDi engines provide the sort of lugging power and driving feel of a modern diesel engine."
The GTDi engines utilise variable valve timing for both camshafts. Both the inlet and exhaust valves' opening times can be varied to optimise overlap and ensure exactly the right fill in the combustion chamber, irrespective of engine revs. This optimises combustion throughout the rev range and contributes to swift acceleration in all operating conditions.

In combination with Powershift or manual gearbox
The 1.6 GTDi T4 will be available in combination with Volvo's automatic six-speed Powershift transmission or a six-speed manual gearbox.
The 1.6 GTDi T3 will only by available with a six-speed manual gearbox.
Both variants feature a DRIVe-button on the instrumentation that engages and disengages fuel-saving technology:

- The automatic version had a technology that disengages the gear if the driver releases the accelerator when the car is rolling. This creates less rolling resistance and improves fuel consumption.
- The manual version comes with a Start/Stop function that shuts off the engine when the car is standing still and the driver releases the clutch and puts the gear lever into neutral. As soon as the driver presses the clutch again the engine restarts.

The six-speed twin-clutch Powershift transmission unites the manual gearbox's efficiency and driving dynamics with the automatic transmission's smoothness and convenience. Clutch operation is coordinated so that no torque losses arise during gearchanges. The result is the same comfort and seamless drive as a conventional automatic transmission, combined with the performance of a manual gearbox.

Launch in autumn 2010
The 1.6 GTDi T3 and T4 is launched in autumn 2010 together with the new Volvo S60 and V60.
The GTDi engines will later also become available in an E85 (ethanol) version.

Engine specifications 1.6 GTDi T3:

Engine type	4-cylinder petrol turbo
Displacement	1595 cm^3
Bore	79.0 mm
Stroke	81.4 mm
Compression ratio	10.0:1
Valves per cylinder	4
Camshafts	DOHC
Max power output	110 kW (150 hp)
Max torque	240 Nm
Emissions	Euro 5

Engine specifications 1.6 GTDi T4:

Engine type	4-cylinder petrol turbo
Displacement	1595 cm^3
Bore	79.0 mm
Stroke	81.4 mm
Compression ratio	10.0:1
Valves per cylinder	4
Camshafts	DOHC
Max power output	132 kW (180 hp) / 5500 rpm
Max torque	240 Nm / 1600-5000 rpm, 270 Nm for brief overboost
Emissions	Euro 5

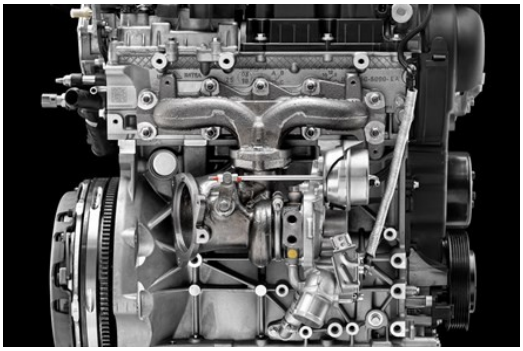
Keywords:
Old S60, Old V60, Press Releases, 2011, Product News

Descriptions and facts in this press material relate to Volvo Cars' international car range. Described features might be optional. Vehicle specifications may vary from one country to another and may be altered without prior notification.

Media Contacts

Volvo Cars Media Relations
Phone: +46 (0)31-59 65 25
media@volvocars.com

Related Images



More Images >

media.volvocars.com > volvocars.com >