Fact Sheet

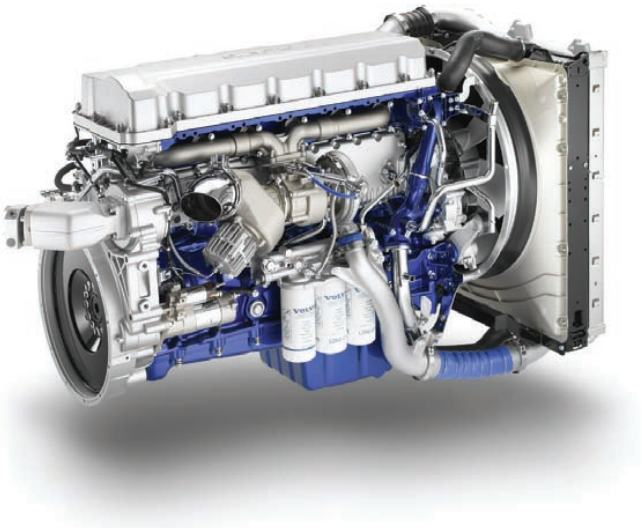
Engine
D13A520, EM-EC01

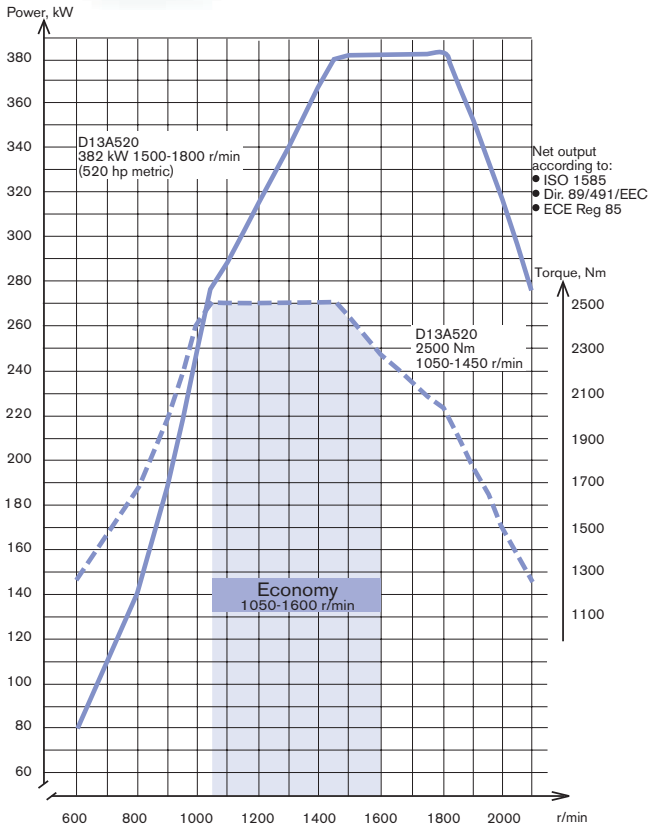
The D13A520 is a 520 hp, 12.8 litre in-line 6-cylinder engine with an overhead camshaft, 4 valves per cylinder and unit injectors. The engine meets EU Euro 3 exhaust emission regulations.

The Volvo D13A520 is a turbo-charged, intercooler engine fitted with a single cylinder head, overhead camshaft and electronically controlled fuel injection.
The D13A520 is designed to ensure excellent driving characteristics, high reliability and excellent fuel efficiency. The timing gear is located at the rear of the engine, this reduces vibration and permits the installation of a rear-mounted Power Take Off.
With a cylinder block and cylinder head made of cast iron, a strong base is created for a dependable engine.
Oil change intervals can stretch up to 100,000 km or 12 months depending on the application.
The D13A520 is wholly suited to transporting heavy goods over long distance as well as construction operations.

The following product features distinguish the D13A520:

- Accurate Engine Management System (EMS)
- Controlled injection sequence
- Low exhaust emission, Euro 3
- Low idling noise
- Fuel efficient engine
- Fully sealed crankcase ventilation available as an option
- Rear mounted, Power Take Off (PTO) available as an option





Specification

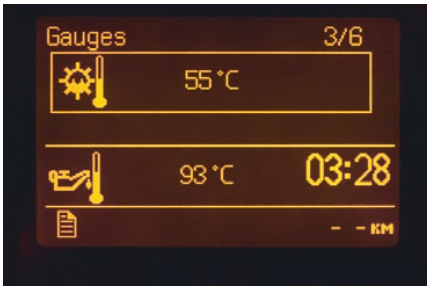
Designation	D13A520, EM-EC01
Max. output at 1500-1800 r/min	382 kW (520 hp)
Max. engine speed	2100 r/min
Max. torque at 1050-1450 r/min	2500 Nm
No. of cylinders	6
Bore	131 mm
Stroke	158 mm
Displacement	12.8 dm^3
Compression ratio	18.1:1
Exhaust brake output at 2300 r/min	170 kW
Engine braking effect VEB at 2300 r/min*	300 kW
Engine braking effect VEB+ at 2300 r/min*	375 kW
Economy engine speeds	1050-1600 r/min
Oil change volume, including filter	33 l
No. of oil filters	2 full-flow, 1 bypass
Cooling system, total volume	38 l
Weight	1115 kg

*VEB/VEB+ (Volvo Engine Brake) is available as an option.

VOLVO

Accurate engine management through Volvo EMS

The D13A520 features Volvo EMS (Engine Management System), a wholly electronically controlled system which provides precise and efficient engine control. The engine control module is thoroughly protected - it sits on rubber mountings and is housed in an aluminium casing where the electronic components are cooled by the flow of fuel in a cooling circuit.
The engine control module takes in data from several sensors on the engine and the vehicle. The control unit compares current readings with stored parameters and adjusts fuel quantity and injection timing accordingly, throughout the engine's operation.
Volvo EMS is integrated with the truck's electronic system and permits advanced communication with the driver via the information display.



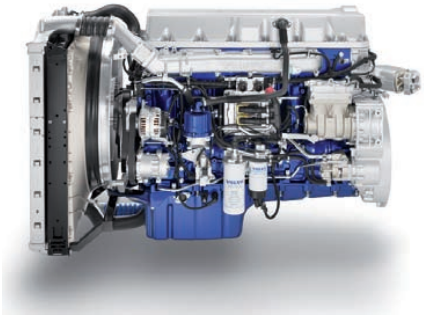
The graphical display gives the driver important information

Control gives a fast injection sequence

The D13A520's gear driven camshaft ensures precise control over the unit injectors and valve timing. The unit injectors are positioned vertically and centrally which provides extremely fast, well controlled injection and symmetrical distribution of the fuel in the combustion chamber. EMS controls the fuel injection via electromagnetic valves in each injector. It is controlled entirely electronically.
The injection pressure can be as high as 2000 bar, resulting in a very fast injection sequence. The injectors are supplied with fuel via a shared duct in the cylinder head. Pre-circulation ensures the correct fuel temperature. The filter and water separator guarantees reliability.

Dependable construction and design

The D13A520 has few parts, helping keep the engine reliable. A strong engine foundation is formed by a cylinder block and cylinder head made of cast iron. The lower part of the cylinder block has a steel reinforced ladder frame – this minimises vibration and increases rigidity.
The timing gear is located at the rear of the engine which reduces the number of components.
The D13A520 engine better exploits the truck's cooling capacity due to a slim design at the front. Cooling air from the engine fan has far lower resistance.

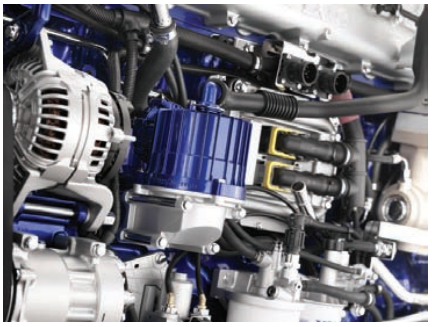


Low exhaust and noise emission

The D13A520 more than meets the demand for high performance in conjunction with low exhaust (Euro 3) and noise emissions.
The D13A520 satisfies noise requirements without needing advanced encapsulation. The crankshaft and camshaft have hydraulic vibration dampers which minimise noise and vibration – a particularly low noise is evident at idling speed.

Crankcase ventilation

The D13A520 engine offers fully sealed crankcase ventilation as an option - the system is called Closed Crankcase Ventilation.
The crankcase gases in the valve cover are returned via a centrifuge-equipped oil separator to the turbo-charger. The oil mist is separated in the maintenance-free centrifuge system, requiring no filter replacements.
This system provides an extremely clean, environmentally friendly engine by re-using the crankcase gases.



Formidable Power Take Off

A Power Take Off (PTO) can be fitted to the Volvo D13A520. The PTO is engine operated and clutch independent.
The PTO is positioned at the rear of the engine, near the flywheel, which ensures high torque extraction.

VEB - High power engine braking

The D13A520 can be fitted with a compression engine brake system called Volvo Engine Brake (VEB). The design is a Volvo patent which makes maximum use of the engine's compression stroke to produce high braking power.
VEB an be used together with the cruise control to maintain high average speed with good operating economy. VEB reduces wear on the ordinary wheel brakes. In addition, the system has low weight in comparison with other supplementary brakes.

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Volvo Truck Corporation
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