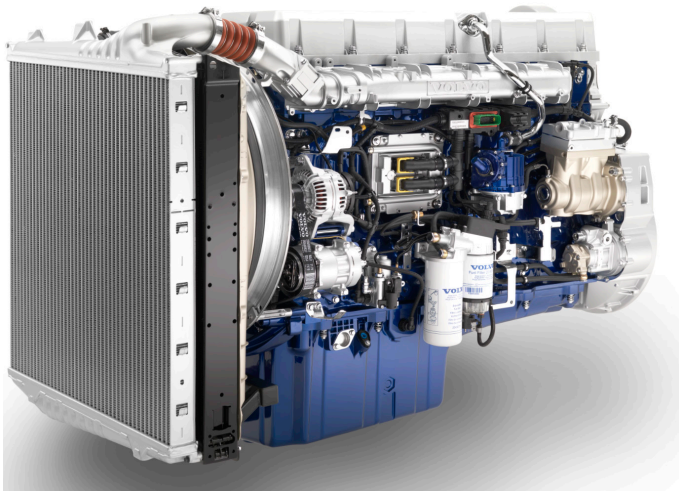
Fact Sheet

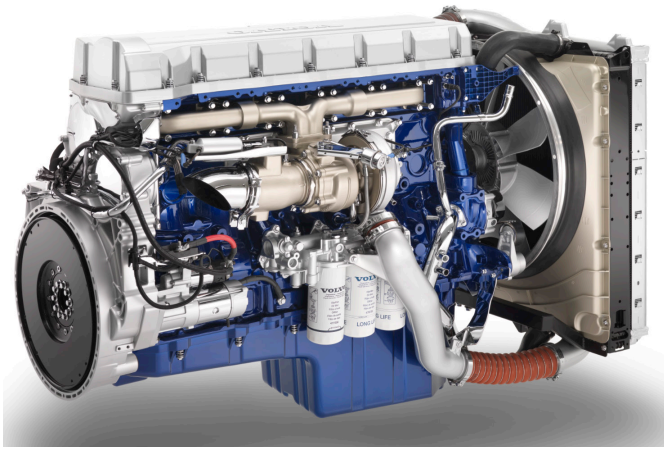
Engine
D16C610, EM- EC01

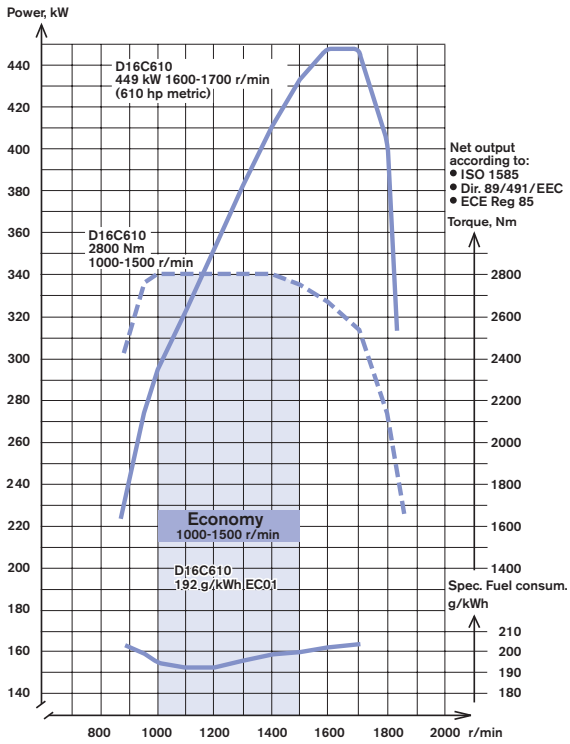
The D16C610 is a 16.1-liter, in-line, six-cylinder, 610 hp diesel engine fitted with a turbocharger and a charge air cooler. The engine meets the EU's Euro 3 emissions requirements.



The D16C610 is intended for heavy types of transport and is based on the same concept as the smaller D9A engine, with an overhead camshaft, four valves per cylinder, unit injectors, and a fitted cylinder head. The design offers very low weight in relation to the engine's output.
The D16C610 generates high torque at low rpm and has a broad range of engine speeds, resulting in excellent driveability.
The engine's functions are controlled fully electronically by the Volvo Engine Management System (EMS), which contributes to low fuel consumption, and low levels of exhaust emissions. The system also offers advanced capabilities for diagnosis and fault tracing.
The transmission is at the rear of the engine, giving it a lower noise level, a compact installation, and allows for the installation of a rear-mounted power take-off.
The following product features distinguish the D16C610:

- Electronic engine management – EMS – with precise fuel injection and low emissions levels.
- Electronically controlled fuel injection with centrally located, vertical unit injectors.
- Maximum torque over a wide range of engine speeds offers good driving characteristics and low fuel consumption.
- High engine braking power with VEB+*.
- Powerful, engine driven, rear-mounted power take-off for directly running a hydraulic pump or flange.
- Electronic oil level sensor that provides a reading on the driver information display.
- The engine concept is fully integrated with the D9 and D12, which is very advantageous in terms of the aftermarket and service.





Specifications

Designation	D16C610, EM-EC01
Max. output at 1600-1700 r/min	449 kW (610 hp)
Max. rpm	1800 r/min
Max. torque at 1000-1500 r/min	2800 Nm
No. of cylinders	6
Bore	144 mm
Stroke	165 mm
Displacement	16.1 dm3
Compression ratio	16.8:1
Exhaust brake power at 2200 r/min	230 kW
Engine braking power (VEB+)* at 2200 r/min	425 kW
Economy engine speeds	1000-1500 r/min
Engine oil change volume incl. oil filter	42 l
No. of oil filters	2 full-flow, 1 bypass
Cooling system, total volume	48 l
Weight	1270 kg

*VEB+ (Volvo Engine Brake+) - available as an option

VOLVO

Four valve technology and overhead camshaft

The D16C has four valves per cylinder and separate inlet and exhaust ports with transverse flow. This results in rapid gas exchange. The combustion chamber is designed to provide optimal combustion.
The design of the inlet port and the location of the valves in the cylinder head minimise the rotational velocity of the inlet air, resulting in a low drop in pressure. The degree of gas-fill is high, contributing to high efficiency.

Symmetrical injection provides more efficient combustion

The D16C is fitted with unit injectors, which enable high injection pressure. The high pressure is created mechanically via a rolling rocker arm, which is driven by the overhead camshaft. The profile of the injection cam is matched to the injector to provide high lift.
The cylinder head has only one common fuel channel to the injectors and inlet ports, and large diameter valves for minimal loss of pressure. This design combines precise injection and low fuel consumption with high output and low emissions.

Electronic engine management integrated in the vehicle's electronic system

D16C engine is fitted with Volvo EMS (Engine Management System), which means that the functions of the engine are controlled fully electronically. EMS provides efficient engine control and an advanced capability for diagnosis and fault tracing.
The engine control module is connected to the vehicle electronic system's data links, and the information is presented on the driver information display.

Engine transmission with a compact installation

The engine's transmission is located at the rear of the engine. This transmission drives the servo steering pump, fuel pump, oil pump, camshaft, and the air compressor. The coolant pump, fan, alternator, and the A/C compressor are located at the front of the engine, and are driven by multi-groove, Poly-V belts. This design results in a low noise level, a compact installation, and offers good cooling characteristics. It also makes it possible to fit a power take-off at the rear of the engine.

VEB+ – reliable, high-power engine braking

The D16C can be fitted with a compression engine braking system called Volvo Engine Brake+ (VEB+). This design is a Volvo patent that puts the engine's compression stroke to optimal use for high braking power, up to 380 kW in the D16C.
VEB+ can be used together with cruise control to maintain a high average speed with a high level of safety.
VEB+ reduces wear on the normal wheel brakes and has low weight compared with other supplementary braking systems.

High capacity power take-off

The Volvo D16C can be fitted with an engine-driven, clutch independent power take-off to operate a directly mounted hydraulic pump or flange. The power take-off can transfer up to 1000 Nm during continuous operation. It is located at the rear of the engine, together with the engine's transmission. The power take-off is designed for high torque extraction with excellent reliability.