



TCD 2012

The Construction Equipment Engine

70–180 kW | 94–244 hp at 2300 to 2400 min⁻¹ | rpm EU Stage III B / US EPA Tier 4 interim

The engine company.



Tier 4 – our driving force, your advantage.

Starting January 2011, diesel engines of mobile construction machines with power classes ranging from 130 to < 560 kW must meet European regulations on exhaust emissions according to EU Stage III B or US EPA Tier 4 interim. These emission standards will require considerable reductions in particulate matter and NO_x emissions.

The considerable reduction of pollutant emission requires that engines be equipped with additional exhaust emission treatment equipment that is adapted to the respective combustion principle.

The individual solution counts

Our goal as engine specialists is to provide our customers with engines that not only meet all of their power needs but also comply with the various emission regulations worldwide while meeting their demands for efficient and economical engine operation. We are therefore developing solutions oriented to meet individual customer requirements.

The modular DVERT® system developed by DEUTZ enables us to implement different emission-reducing techniques specifically tailored to fulfill requirements while maintaining the proverbial criteria of our engines, which includes high economy, dependability, and long life.

The diesel oxidation catalytic converter combined with diesel particulate filter is one of the DVERT® modules we use. This is the standard technology we implement for 2012-series engines that must comply with the EU exhaust emission stage III B and the Tier 4 interim in the United States.

The diesel oxidation catalytic converter initially oxidizes gaseous pollutants such as HC, CO, and NO. Soot particulates are then captured in an enclosed diesel particulate filter installed after the catalytic converter at nearly 100% efficiency.

Regeneration of the diesel particulate filter

DEUTZ offers purely passive regeneration systems for engines with power ratings < 130 kW. The defined exhaust gas conditions, which are prerequisite for this can be achieved by implementing specific engine control measures.

DEUTZ alternatively offers active regeneration solutions for engines of all power classes where the filter is regenerated by a burner combined with an exothermic reaction in the diesel oxidation catalytic converter. The burner creates a primary flame that is used to vaporize fuel additionally injected into the exhaust. This mixture produces a strong exothermic reaction in the downstream diesel oxidation catalytic converter, which ensures that the temperature of the exhaust is increased to the level necessary for regenerating the diesel particulate filter. This standard DEUTZ solution enables regeneration of the diesel particulate filter at all time and for all load patterns. DEUTZ thus offers the optimum overall solution for every application – maximum performance coupled with minimum operating costs.

DVERT® – solutions with a future

Only after exhaust emission stage EU IV / US EPA Tier 4 take effect, will it be necessary to equip engines of this model series with an additional SCR system. When the time comes, DEUTZ will be able to draw on its cache of DVERT® modules already available today.

Characteristics

Modern, liquid-cooled 4 and 6-cylinder in-line engines | Turbocharged with intercooler (air/air), cooled external exhaust gas recirculation and diesel particulate filter | Rugged engine with a high power density | Power take-off capabilities integrated in the gear train | Electronic engine control with intelligent adaptation to drive management | High-pressure fuel injection with DEUTZ's Common Rail System (DCR®)

Your Benefits

- Excellent economy based on simple and cost-effective installation, exceptional reliability, and long service intervals.
- Low noise emissions eliminate the need for costly additional sound insulation.
- Slender engine design and variable layout of the front end of the engine offer maximum flexibility.
- With the DVERT® platform, the 2012 is prepared for future EU Stage IV and US EPA Tier 4 exhaust emission stages.
- The mass compensating gear of the smooth running 4-cylinder engine guarantees great driving comfort.
- The 2012 complies with emissions controls for mobile machinery in accordance with EU Nonroad 2004/26/EU Stage III B and US EPA Tier 4 interim.

Engine Specifications

Type of cooling:	Liquid cooling
Crankcase/cylinders:	Crankcase mad of gray cast iron; cylinder sleeves integrated into the crankcase (PARENT bore)
Crankcase ventilation:	Open
Cylinder head:	Modular design, one-piece gray cast iron cylinder head
Valve arrangement / control:	Overhead in the cylinder head, two intake and exhaust valves per cylinder, actuated by tappets, pushrods, and rockers. Control is driven by camshaft running in binary bearings
Pistons:	Triple-ring pistons, two compression rings, one oil ring
Piston cooling:	Injected cooling oil
Turbocharging:	Wastegate turbocharger with charge air intercooler (air/air).
Connecting rod:	Drop-forged steel
Crankshaft bearings:	Binary bearings, one thrust bearing
Piston rod bearings:	Quarternary/ternary friction bearings
Crankshaft:	Drop-forged steel
Camshaft:	Steel running in binary bearings
Camshaft drive:	By the crankshaft by straight, high-g geared spur gears
Lubrication:	Forced-feed lubrication
Lubricating oil cooler:	External
Lubricating oil filter:	Filter cartridge in the main of lubricating oil flow
Injection pump / controller:	One high-pressure unit pump (4-cylinder); two high-pressure unit pumps (6-cylinder); electronic control device
Fuel supply pump:	Belt-driven external gear pump
Injector:	8-hole injection nozzle
Fuel filter:	Replaceable cartridge
Alternator:	Three-phase alternator 28 V, 100 A (standard)
Starter:	24 V / 5,5 kW (standard)
Heating system:	Optional connection for cab heating
Options for adapting to specific equipment requirements:	E.g. 12V / 24V electrical system, hydraulic pumps, connection housing, oil pans, fan attachments

Technical Data

Engine model		TCD 2012 L4	TCD 2012 L6
Number of cylinders		4	6
Bore/stroke	mm in	101/126 3.98/4.96	101/126 3.98/4.96
Displacement	l cu in	4.04 247	6.06 370
Compression ratio		18 : 1	18 : 1
Max. rated RPM	min ⁻¹ rpm	2400	2300
Mean piston speed	m/s ft-m	10.1 1988	10.1 1988

EU Stage III B / US EPA Tier 4 interim

Power ratings for mobile construction machines ¹⁾		TCD 2012 L4	TCD 2012 L6
Power output acc. to ISO 14396	kW hp	115 154	180 241
at engine speed	min ⁻¹ rpm	2400	2300
At mean effective pressure	bar psi	14.2 206	15.5 225
Max. torque	Nm lb-ft	609 449	1000 738
at engine speed	min ⁻¹ rpm	1600	1450
Minimum idle speed	min ⁻¹ rpm	600	600
Specific fuel consumption ²⁾	g/kWh lb/hp-hr	215 0.35	210 0.34
Weight acc. to DIN 70020, Part 7A ³⁾	kg lb	400 882	520 1146

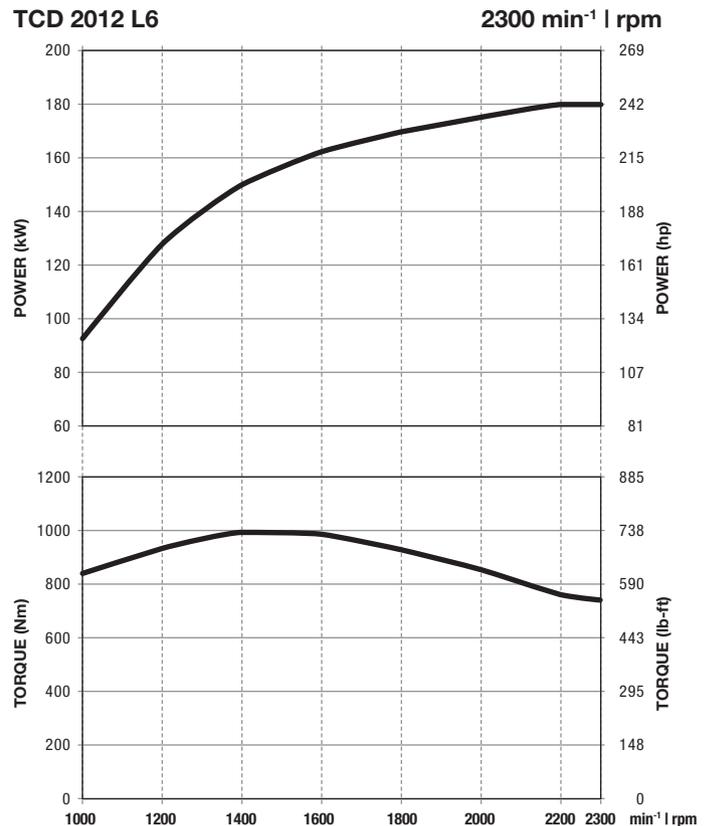
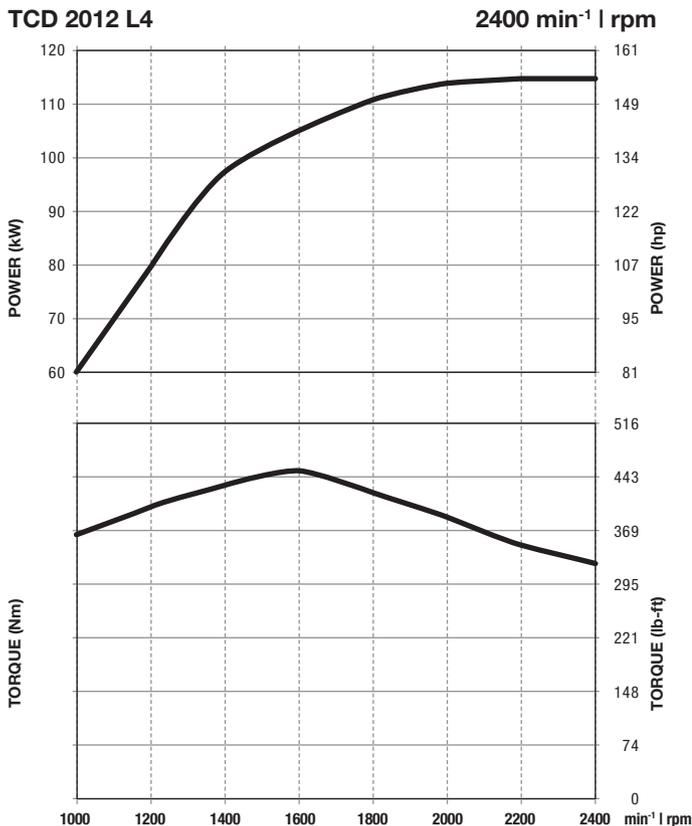
1) Power ratings without deducting fan power consumption

2) Best WOT consumption based on diesel fuel with a density of 0.835 kg/dm³ at 15 °C.

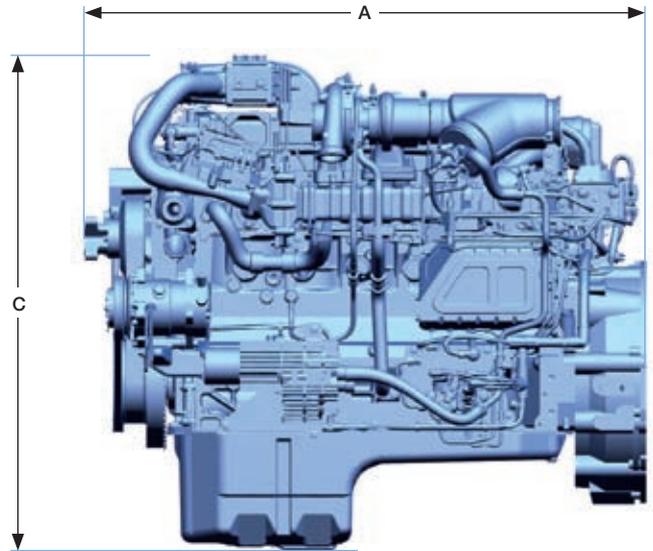
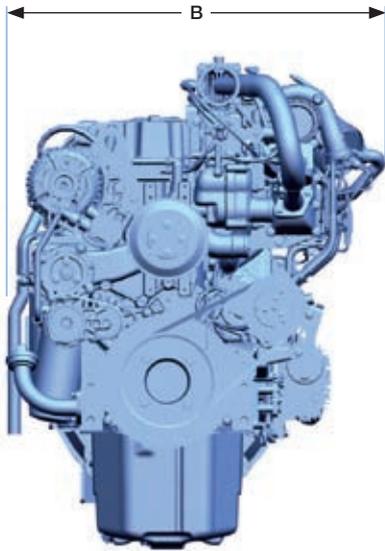
3) Without starter/alternator, cooling system and liquids but with flywheel and flywheel housing

The figures indicated in this datasheet are for informational purposes only and are not binding. The specifications in the quote are determinative.

Standard Engines



Dimensions		A	B	C
TCD 2012 L4	mm in	783 31	629 25	812 32
TCD 2012 L6	mm in	1095 43	680 27	990 39



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