TCD 2012

Engine For Agricultural Equipment

68–188 kW | 91–252 hp at 2100 min^{-1} | rpm **EU Stage III B / US EPA Tier 4 interim**

The engine company.

DEUTZ®

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 and US EPA Tier 4 interim. These emission standards will require considerable reductions in particulate matter and NO_X emissions.

Accordingly, our engines will be receiving 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 to the greatest possible extent.

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

Selective catalytic reduction (SCR) is one of the standard DVERT® modules we use to highly efficiently reduce the NO_X emissions of our 2012-series engines, beginning with exhaust emission stages III B and EPA Tier 4 interim.

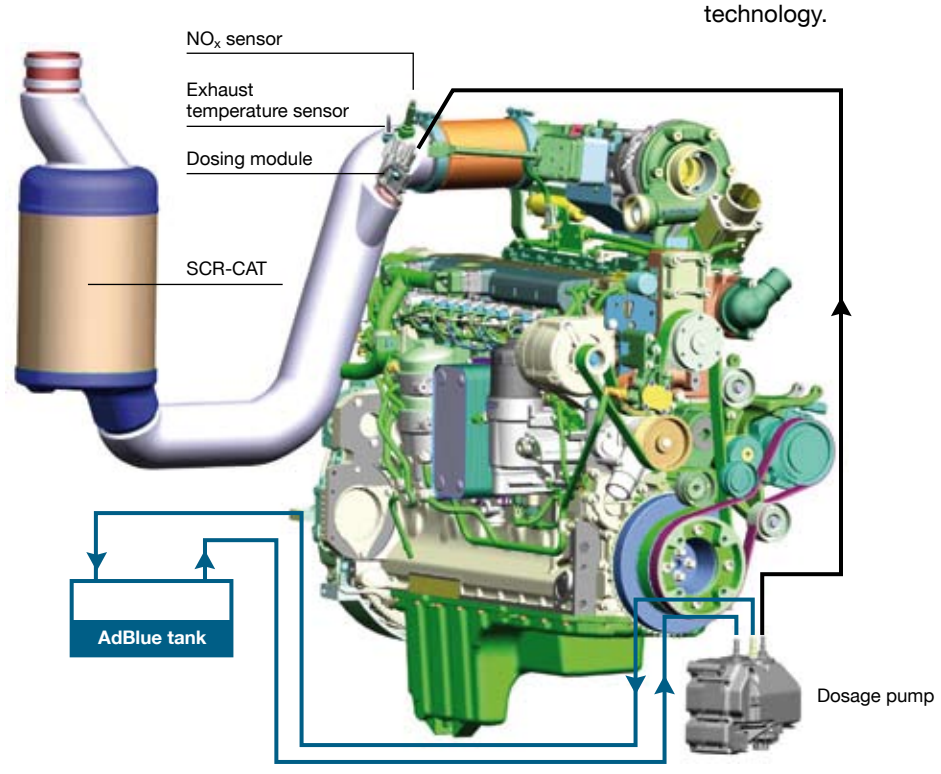
This method does not directly use the ammonia necessary for the selective catalytic reaction but instead injects it as a 35% water-based urea solution into the engine exhaust where the chemical reaction produces ammonia (NH_3) and carbon dioxide (CO_2). At the corresponding temperature, the ammonia formed in the SCR catalytic converter reacts with and reduces the nitrogen oxide (NO_X) in the exhaust. The amount of urea solution injected by a special injection nozzle depends on the amount of nitrogen oxide currently present at the engine operating point and thus the respective load and rpm. The urea consumption thus depends on the collective engine load and can range between 2% and 5% of the engine fuel consumption.

Higher performance and dynamics – lower fuel consumption

The customer benefits from using the SCR method in the 2012-series in that fuel and lubricating oil consumption remains at known low levels for his machines and no extra expense incurs for engine cooling. The SCR process, in conjunction with optimized injection and combustion technology, makes it possible to reduce particulate emission limits solely with the help of engine modifications.

DVERT® – solutions for the future

Only after exhaust emission stage EU IV / US EPA Tier 4 takes effect, will it be necessary to equip engines of this model series with combined particulate filter and $DeNO_X$ technology.



Characteristics

Modern, liquid-cooled 4 and 6-cyclinder in-line engines | Turbocharged with intercooler (air/air) | 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®), SCR Exhaust aftertreatment

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 in the machine.
- Slender engine design and variable layout of the front end of the engine offer maximum application 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-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:	Two high-pressure unit pumps; electronic control device
Fuel supply pump:	Belt-driven external gear pump
Injector:	8-hole injection nozzle
Fuel filter:	Replaceable cartridge
Alternator:	Three-phase alternator 14 V, 150 A (standard)
Starter:	12 V / 4 kW (standard)
Heating system:	Optional connection for cab heating
Options for adapting to specific equipment requirements:	Hydraulic pumps, connection housing, oil pans, fan attachments, air-conditioning compressor, alternators

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 | 246	6.06 | 370
Compression ratio		18.1 : 1	18.1 : 1
Max. rated RPM	min^{-1} | rpm	2100	2100
Mean piston speed	m/s | ft-m	8.8 | 1736	8.8 | 1736

EU Stage III B / US EPA Tier 4 interim

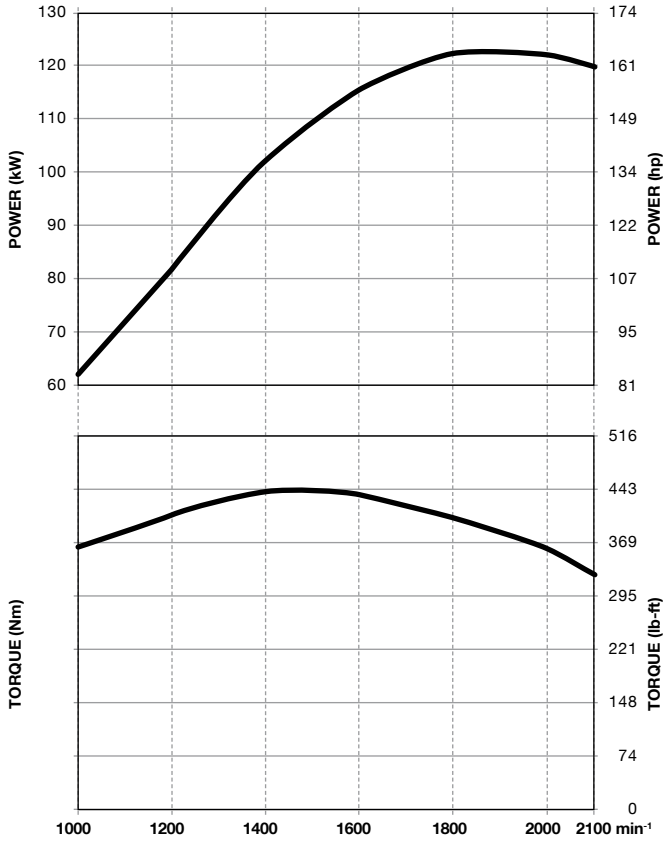
Power ratings for mobile construction maschines[1)]		TCD 2012 L4	TCD 2012 L6
Power output acc. to ISO 14396	kW | hp	120 | 160.9	188 | 252.1
at engine speed	min^{-1} | rpm	2100	2100
Max. power	kW | hp	124 | 166.3	195 | 261.5
at speed	min^{-1} | rpm	1900 | 2100	1900 | 2100
At mean effective pressure	bar | psi	16.98 | 246	17.74 | 257
Max. torque	Nm | lb-ft	699 | 516	1134 | 836
at engine speed	min^{-1} | rpm	1500	1500
Minimum idle speed	min^{-1} | rpm	600	600
Specific fuel consumption[2)]	g/kWh | lb/hp-hr	205 | 0.34	200 | 0.33
Weight	kg | lb	?? | ??	624 | 1376

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

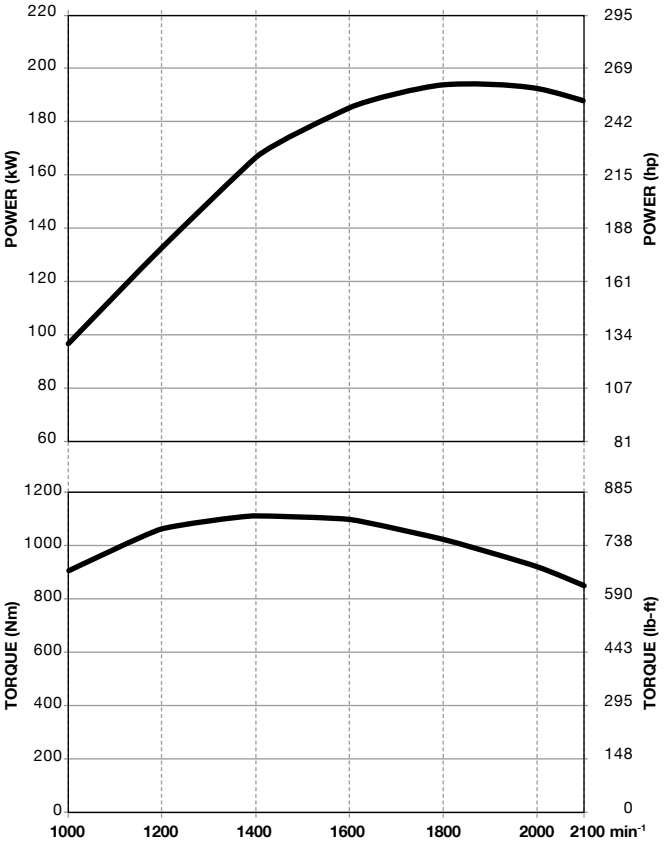
The figures indicated in this datasheet are for informational purposes only and are not binding.
The specifications in the quote are determinative.

Standard Engines

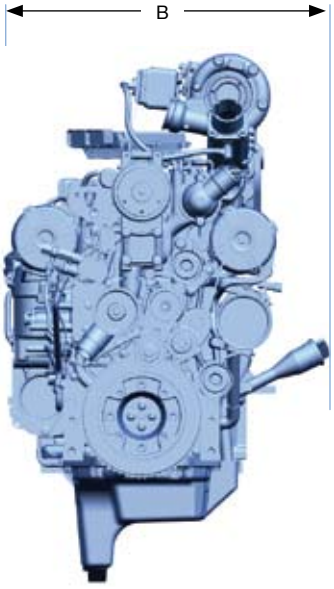
TCD 2012 L4 **2100 min^{-1} | rpm**

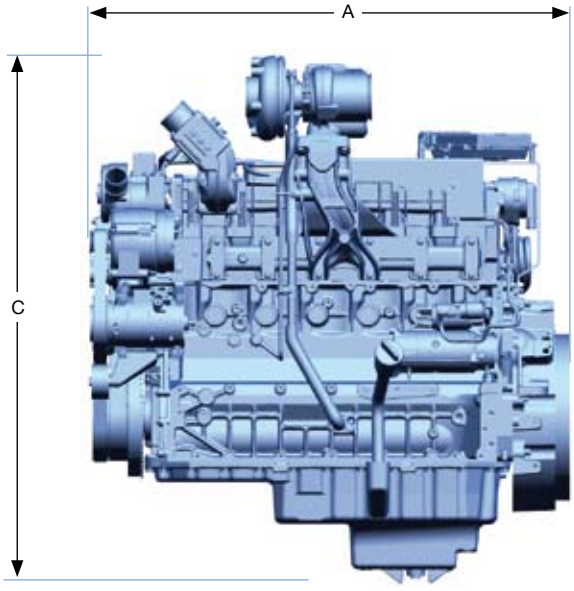


TCD 2012 L6 **2100 min^{-1} | rpm**



Dimensions		A	B	C
TCD 2012 L4	mm | in	834 | 32.8	647 | 25.5	1130 | 44.5
TCD 2012 L6	mm | in	1071 | 42.2	726 | 28.6	1175 | 46.3





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