



TCD 4.1

TCD 6.1

Engine for Industrial Applications

70-180 kW | 94-241 hp at 2300 to 2400 min⁻¹ | rpm

EU Stage III B / US EPA Tier 4 interim

The engine company.



Characteristics

Modern, water-cooled 4 and 6-cylinder in-line engines | Turbocharged with intercooler (air/air), cooled external exhaust gas recirculation and diesel particulate filter | Robust 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 Common Rail System (DCR®) | In compliance to non-road emission standards EU Stage III B and US EPA Tier 4 interim

Your Benefits

- Excellent economy, based on simple and cost-effective installation, exceptional reliability, long service intervals, and exceptionally low fuel and oil consumption
- Very low noise emissions eliminate the need for costly additional sound insulation.
- Slender engine design and variable layout of the front and rear end of the engine offer maximum flexibility for diverse installation purposes
- Based on the DVERT® platform, the TCD 4.1 / 6.1 are prepared for future EU Stage IV and US EPA Tier 4 exhaust emission stages.
- The optional mass balancing shafts of the smooth running 4-cylinder engine guarantees great driving comfort.
- A modular exhaust aftertreatment system tailored to meet the requirements of construction equipment with respect to compact installation and competitive cost: the closed Diesel particulate filter (DPF) with throttle regeneration respectively diesel burner regeneration
- The extensive network of DEUTZ distributors and dealers providing excellent technical back up and enviable global brand presence.

Engine Specifications

Type of cooling:	Water cooling
Crankcase:	Grey cast iron with integrated cylinders
Crankcase ventilation:	Open vent system
Cylinder head:	Modular design, one-piece grey cast iron cylinder head
Valve control:	Overhead valves in the cylinder head, two intake and exhaust valves per cylinder, actuated by tappets, pushrods, and rockers. Control is driven by camshaft
Pistons:	3-ring piston with oil jet cooling
Turbocharging:	Wastegate turbocharger with charge air intercooler (air/air).
Connecting rod:	Drop-forged steel
Crankshaft bearings:	Bi-metal shell bearings
Piston rod bearings:	Tri-metal shell bearings
Crankshaft:	Drop-forged steel
Camshaft:	Steel driven by high-geared spur gears
Lubrication system:	Forced-feed lubrication, integrated oil cooler with spin-on cartridge filter
Injection system:	1600 bar and 2000 bar High pressure Common Rail DEUTZ DCR® system with two high pressure pumps, CR injector with 8 hole injection nozzle and EMR 4 electronic control unit
Fuel supply pump:	Belt-driven gear pump
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:	12 V / 24 V electrical system, hydraulic pump drives, connection housing, flywheels, oil pans, fan attachments

Technical Data

Engine model		TCD 4.1 L4	TCD 6.1 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	9.7 1902

EU Stage III B / US EPA Tier 4 interim

Power ratings ¹⁾		TCD 4.1 L4	TCD 6.1 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

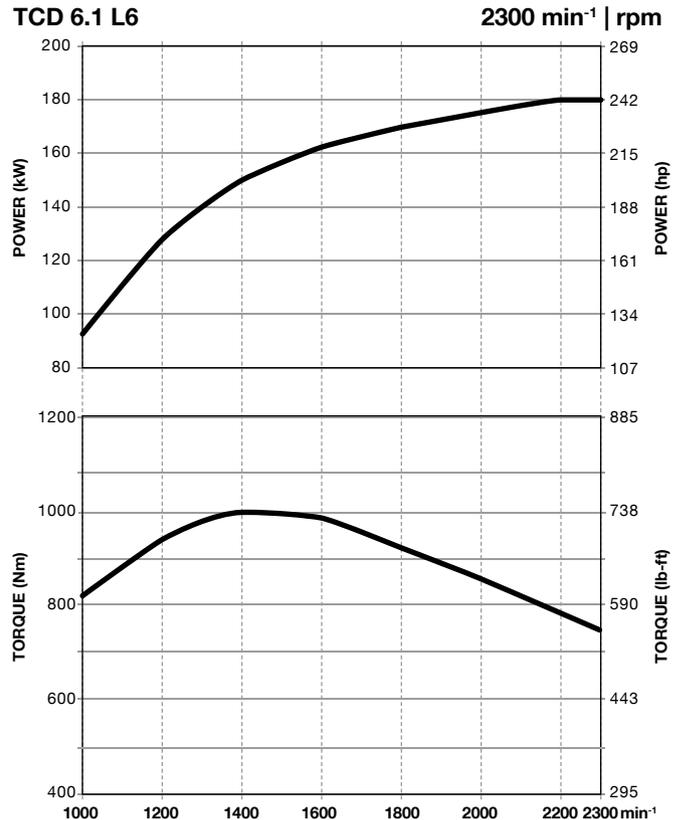
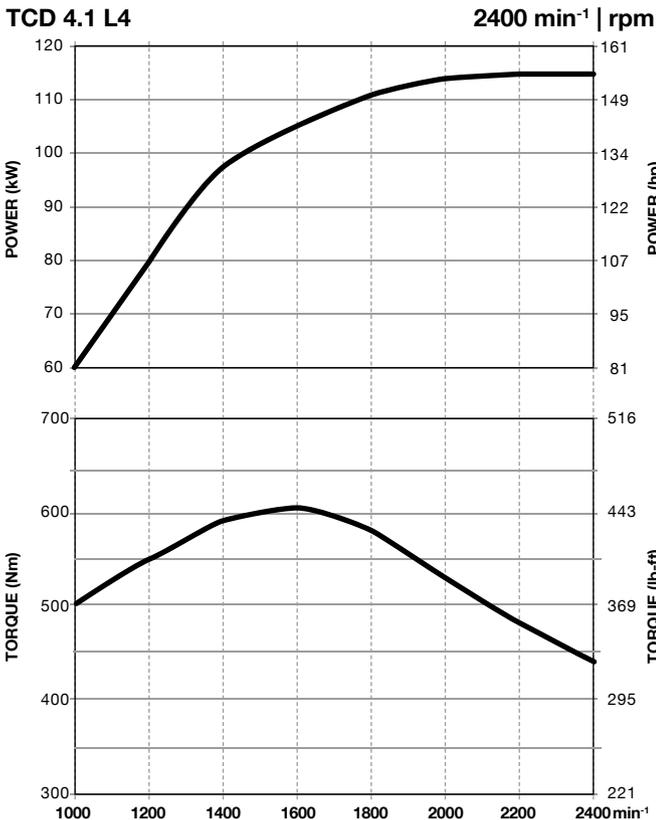
1) Power ratings at flywheel gross, without cooling system

2) At optimal operating point. Specific fuel consumption based on diesel fuel with a specific gravity of 0.835 kg/dm³ at 15 °C (6.96 lb/US gallon at 60 °F).

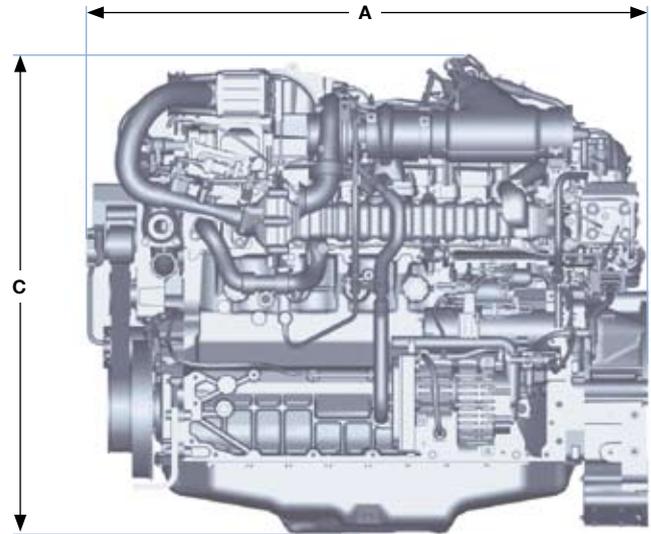
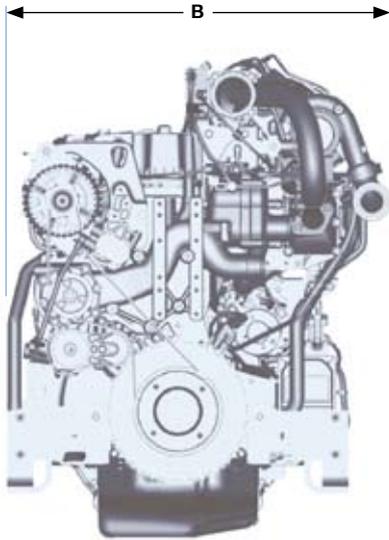
3) Without starter/alternator, cooling system and liquids but with flywheel and flywheel housing

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 4.1 L4	mm in	783 31	629 25	812 32
TCD 6.1 L6	mm in	1095 43	680 27	990 39



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. The considerable reduction in particulate matter and NO_x necessary to meet those emission regulations 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 fulfil requirements while maintaining the proverbial criteria of our engines, which include high economy, dependability, and long life. The Diesel Oxidation Catalytic Converter combined with Diesel Particulate Filter (DPF) is one of the DVERT® modules we use. This is the standard technology we implement for TCD 4.1/6.1 series engines complying with the EU exhaust emission Stage III B and the US EPA Tier 4 interim.

Operation mode and Regeneration of the Diesel Particulate Filter

The Diesel Oxidation Catalytic converter initially oxidizes gaseous pollutants such as HC, CO and NO. Soot particulates are then captured at nearly 100 % efficiency in a closed Diesel Particulate Filter installed after the catalytic converter. DEUTZ offers 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. A continuous catalytic reaction regenerates the filter. The NO₂ produced in the DOC oxidizes in the Diesel Particulate Filter thereby generating the temperature required to burn off the deposits of soot. This type of filter regeneration is possible for virtually all load patterns and represents by far the most cost-effective solution.

In case of a DPF installation in combination with low exhaust temperatures, the regeneration is actively supported by an electronically controlled intake air throttle to achieve the temperature level required for the regeneration.

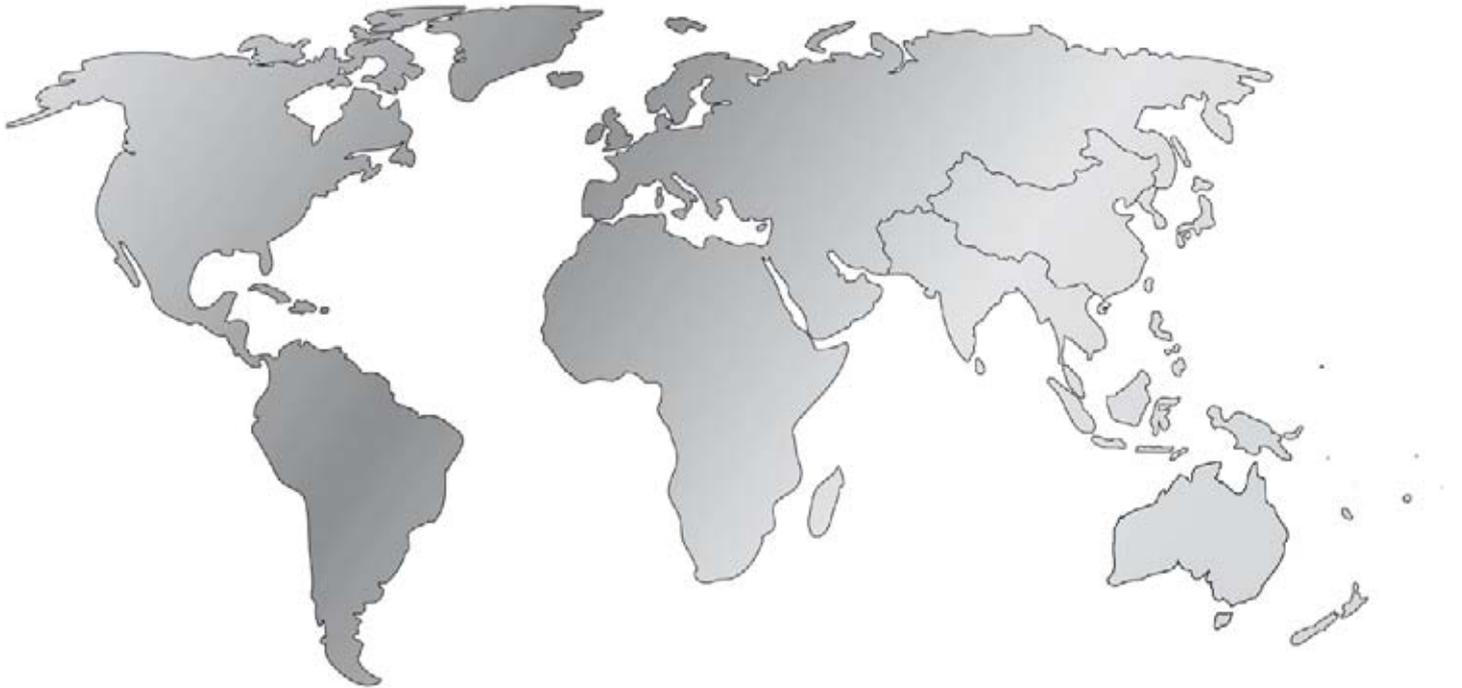
For engines >130 kW DEUTZ offers active regeneration solutions where the filter is regenerated by a burner combined with an exothermic reaction in the DOC. The burner creates a primary flame that is used to vaporize fuel additionally injected into the exhaust. This mixture produces a strong exothermic 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 DPF. This solution enables regeneration of the Diesel Particulate Filter at all time and for all load patterns without any impact on machine performance. 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, it will be necessary to equip engines of this series with an additional SCR system, another DVERT® module already available today.

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