TCD 7.8

Engine for Industrial Applications

160-250 kW | 214-335 hp at 2200 min^{-1} | rpm

EU Stage III B / US EPA Tier 4 interim

The engine company.

DEUTZ®

Characteristics

Modern, water-cooled 6-cyclinder in-line engine | Turbocharged with intercooler (air/air), cooled external exhaust gas re-circulation and diesel particulate filter | High-performance, 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 and long engine life, 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 7.8 is prepared for future EU Stage IV and US EPA Tier 4 exhaust emission stages.
- The compelling performance of the smooth running engine guarantees great driving comfort.
- The TCD 7.8 uses an exhaust aftertreatment system designed for the needs heavy duty construction machinery: closed DPF with active diesel burner regeneration for maximum machine availability
- 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 wet cylinder liners
Crankcase ventilation:	Open vent system
Cylinder head:	Modular design, 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:	Tri-metal shell bearings
Piston rod bearings:	Tri-metal shell bearings
Crankshaft:	Drop-forged steel
Camshaft:	Steel, driven by straight, high-geared spur gears
Lubrication system:	Forced-feed lubrication, integrated oil cooler with spin-on cartridge filter
Injection system:	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:	Gear pump in gear train
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:	Hydraulic pump drives, connection housing, flywheels, oil pans, fan attachments

Technical Data

Engine model		TCD 7.8 L6
Number of cylinders		6
Bore/stroke	mm | in	110/136 | 4.33/5.35
Displacement	l |cu in	7.75 | 473
Compression ratio		18 : 1
Rated RPM	min^{-1} | rpm	2200
Mean piston speed	m/s | ft-m	10.0 | 1969

EU Stage III B / US EPA Tier 4 interim

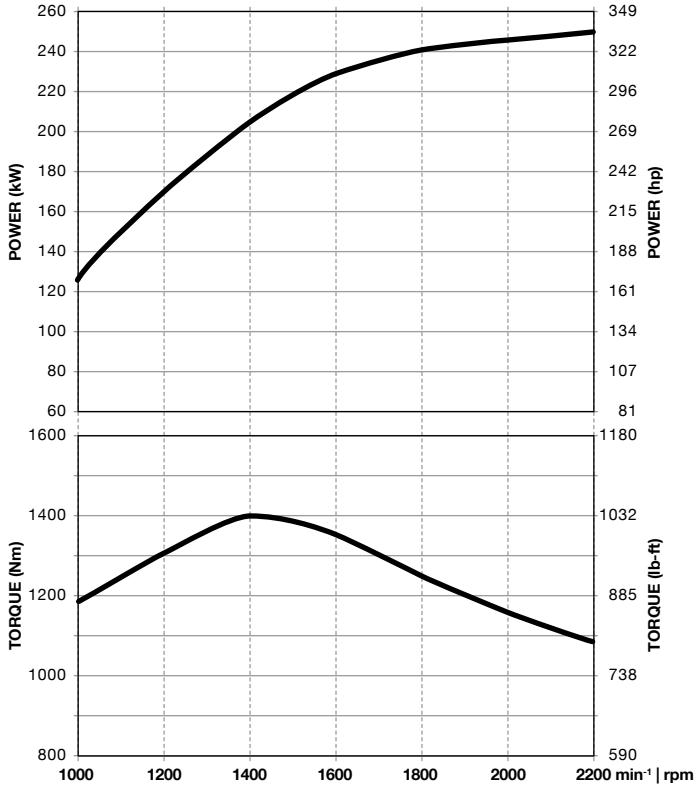
Power ratings[1)]		TCD 7.8 L6
Power output acc. to ISO 14396	kW | hp	250 | 335
at engine speed	min^{-1} | rpm	2200
At mean effective pressure	bar | psi	17.5 | 254
Max. torque	Nm | lb-ft	1400 | 1033
at engine speed	min^{-1} | rpm	1450
Minimum idle speed	min^{-1} | rpm	600
Specific fuel consumption[2)]	g/kWh | lb/hp-hr	200 | 0.33
Weight acc. to DIN 70020, Part 7A[3)]	kg | lb	705 | 1554

1) Power ratings without deducting fan power consumption
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

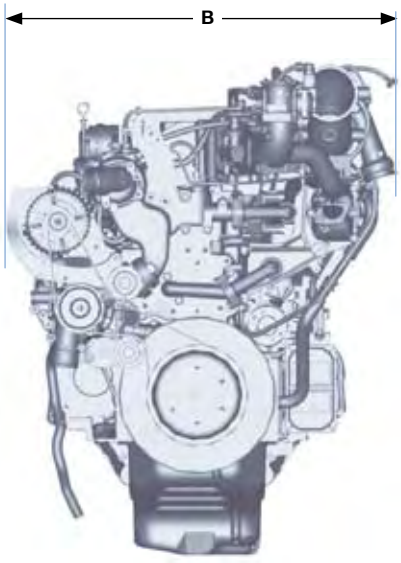
The figures indicated in this datasheet are for informational purposes only and are not binding.
The specifications in the quote are determinative.

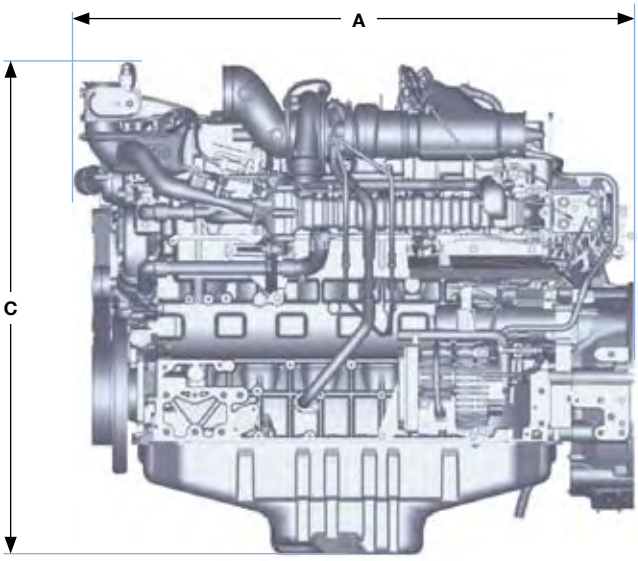
Standard Engine

TCD 7.8 L6 **2200 min^{-1} | rpm**



Dimensions		A	B	C
TCD 7.8 L6	mm | in	1190 | 47	930 | 37	1020 | 40





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 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 (DPF) is one of the DVERT® modules we use. This is the standard technology we implement for TCD 7.8 engines that have to comply with the EU exhaust emission Stage III B and the US EPA Tier 4 interim. Operation mode and Regeneration of 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.

Regeneration of the Diesel Particulate Filter
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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