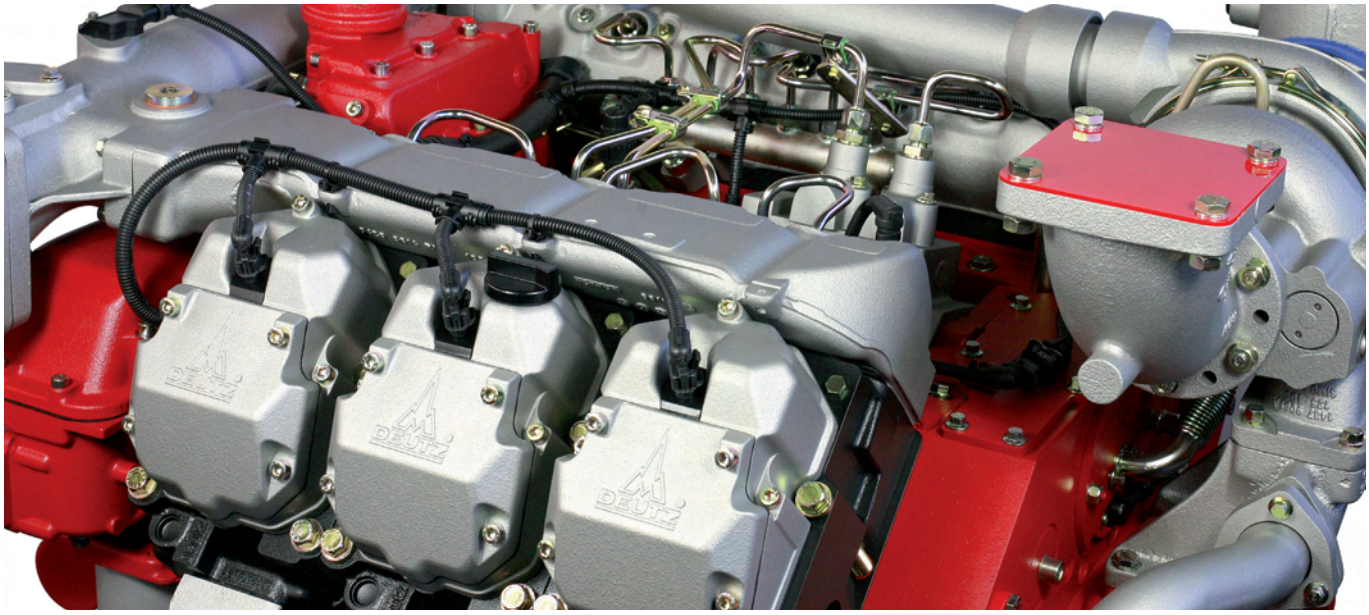


TCD 12.0
TCD 16.0

Engine for Industrial Applications

240-520 kW | 322–697 hp at 2100 min^{-1} | rpm

EU Stage III B / US EPA Tier 4 interim

The engine company.

DEUTZ®

Characteristics

Modern water-cooled 6 and 8 cylinder engines in V-configuration with 90° angle | Optimized turbocharging with electronic control and intercooling | Exceptionally compact, powerful and 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 CR fuel injection | SCR-technology | In compliance to non-road emission standards EU Stage III B and US EPA Tier 4 interim

Your Benefits

- Using proven technology with high power density results in high equipment performance, availability and dependability.
- The modern injection system ensures low fuel consumption and highly economical operation.
- Crankshaft power take off at front and rear end and up to 3 additional power take offs with an overall torque of 520 Nm offer maximum flexibility for diverse installation purposes.
- Constant engine cooler size by the use of SCR-technology.
- Space-saving design and low noise emissions reduce installation cost.
- Based on the DVERT® platform, the engines are prepared for future EU Stage IV and US EPA Tier 4 exhaust emission stages.
- A modular exhaust aftertreatment system with optional configuration variants offers maximum flexibility to integrate the engines in agricultural, mobile and industrial machinery.
- 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:	Gray cast iron crankcase with wet cylinder liners
Crankcase breather:	Closed-circuit system, vacuum-controlled
Cylinder head:	Individual cross-flow cylinder heads made of gray cast iron
Valve control:	Overhead valves in the cylinder head, four-valve technology, actuated by tappets, pushrods, and rockers. Control is driven by a central camshaft.
Pistons:	3-ring pistons, cooled by cooling oil jets
Connecting rod:	Drop-forged steel
Crankshaft:	Drop-forged steel with bolted counterweights
Crankshaft and big-end bearings:	Tri-metal friction shell bearings / sputter shell bearings
Camshaft:	Steel camshaft, driven by gear
Lubrication:	Forced-feed lubrication with gear pump, with integrated oil cooler and oilfilter cartridge in main lubricating oil flow
Turbocharging:	electronically controlled wastegate turbocharger with charge air intercooler
Fuel injection system:	2.000 bar high pressure common rail system with in-line piston pump, CR injector with 8-hole injection nozzle and EMR 4 electronic control unit
Fuel supply pump:	Mechanical gear pump, integrated in CR high pressure pump
Fuel filter:	Replaceable cartridge
Alternator:	Three-phase alternator 28 V, 110 A
Starter:	24 V / 5.5 kW, 6.5 kW
Heating system:	Optional connection for cab heating
Options for adapting to specific equipment requirements:	Power take offs for hydraulic pumps or compressors, connection housing, flywheels, oil pans, fan attachments, power enhanced alternators

Technical Data

Engine model		TCD 12.0 V6	TCD 16.0 V8
Number of cylinders		6	8
Bore/stroke	mm | in	132/145 | 5.2/5.7	132/145 | 5.2/5.7
Displacement	l | cu in	11.9 | 726.2	15.9 | 970.28
Rated RPM	min^{-1} | rpm	1800–2100	1800–2100
Minimum idle speed	min^{-1} | rpm	600	600
Mean piston speed	m/s | ft-sec	10.15 | 33.3	10.15 | 33.3

EU Stage III B / US EPA Tier 4 interim

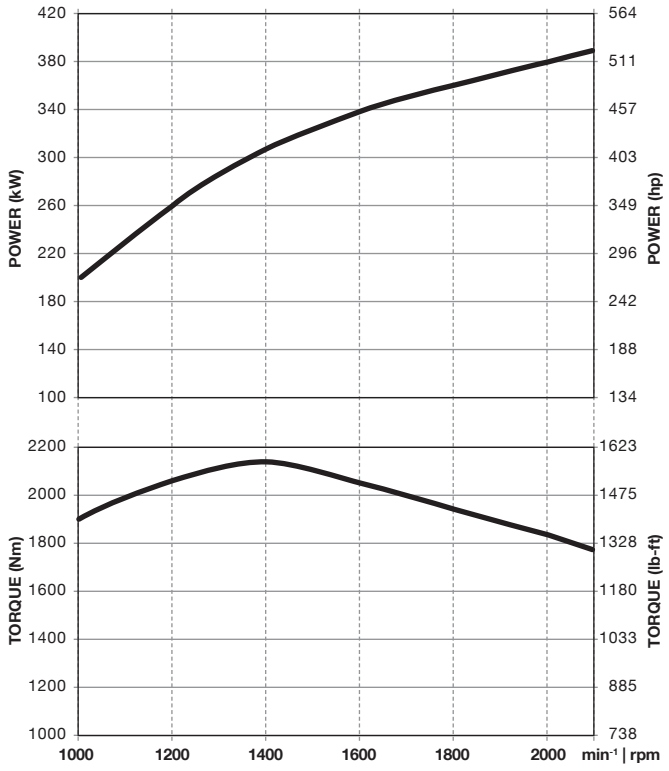
Power ratings[1)]		TCD 12.0 V6	TCD 16.0 V8
Power output acc. to ISO 14396	kW | hp	390 | 524	520 | 697
at engine speed	min^{-1} | rpm	2100	2100
At mean effective pressure	bar | psi	18.7 | 271.2	18.7 | 271.2
Max. torque	Nm | lb-ft	2130 | 1571.0	2890 | 2131.6
at engine speed	min^{-1} | rpm	1400	1400
Specific fuel consumption[2)]	g/kWh | lb/hph	193 | 0.317	194 | 0.318
Weight acc. to DIN 70020, Part 7A[3)]	kg | lb	995 | 2193.60	1260 | 2777.82

1) Power ratings without cooling system
2) At optimal operating point. Specific fuel consumption based on diesel fuel with a specific gravity of 0.835 kg/dm^3 at 15 °C (6.96 lb/US gallon at 60 °F), acc. to ISO 3046-1
3) Without starter/alternator but with flywheel and flywheel housing, lubricating oil and cooling system

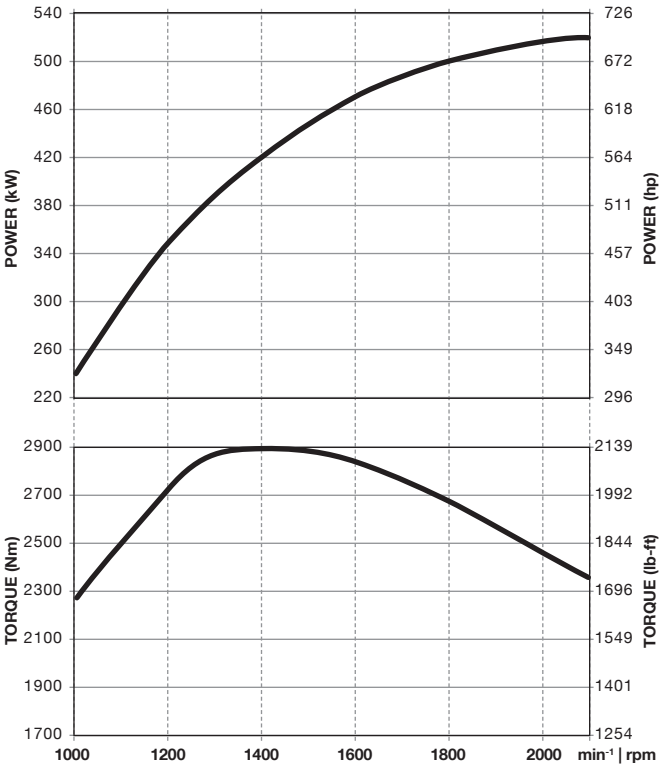
The figures indicated in this datasheet are for informational purposes only and are not binding.
The specifications in the quote are determinative.

Standard Engines

TCD 12.0 V6 — **2100 min^{-1} | rpm**

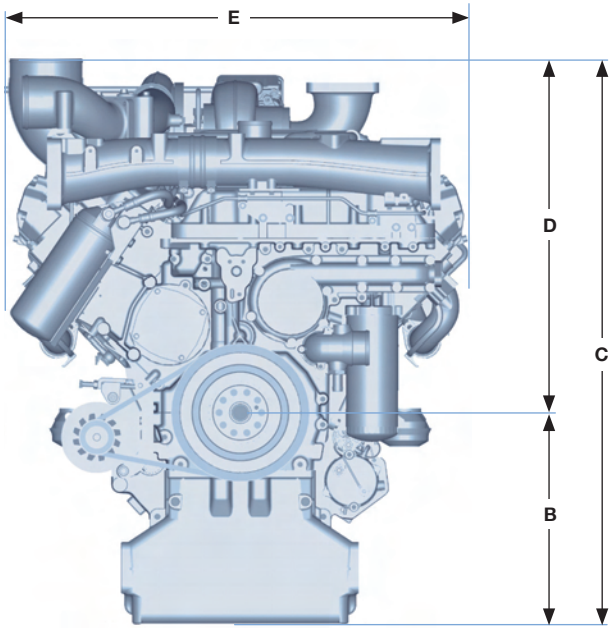


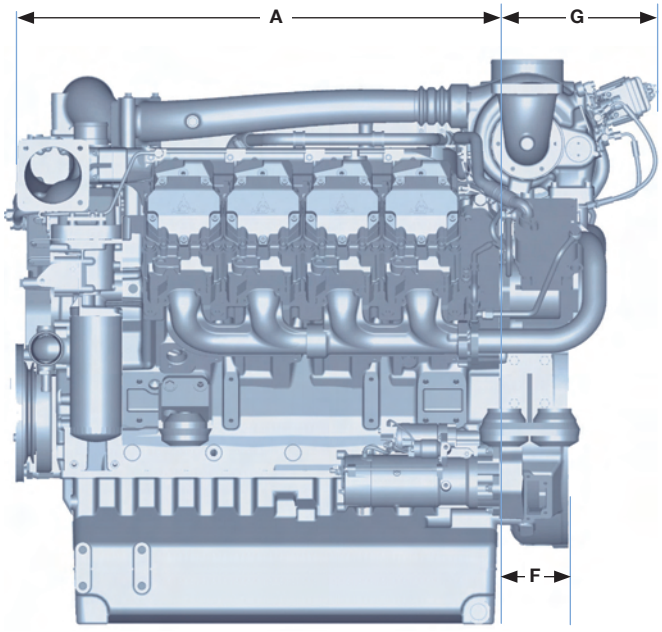
TCD 16.0 V8 — **2100 min^{-1} | rpm**



TCD 12.0 / TCD 16.0 – Standard Engine

Dimensions		A	B	C	D	E	F	G
TCD 12.0 V6	mm | in	899 | 35.4	460 | 18.1	1116 | 43.9	656 | 25.8	925 | 36.4	143 | 5.6	291 | 11.5
TCD 16.0 V8	mm | in	1064 | 41.9	460 | 18.1	1196 | 47.0	736 | 28.9	925 | 36.4	143 | 5.6	321 | 12.6

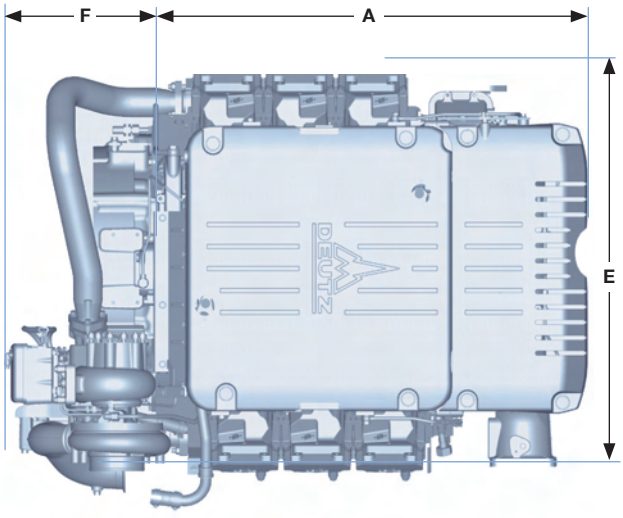


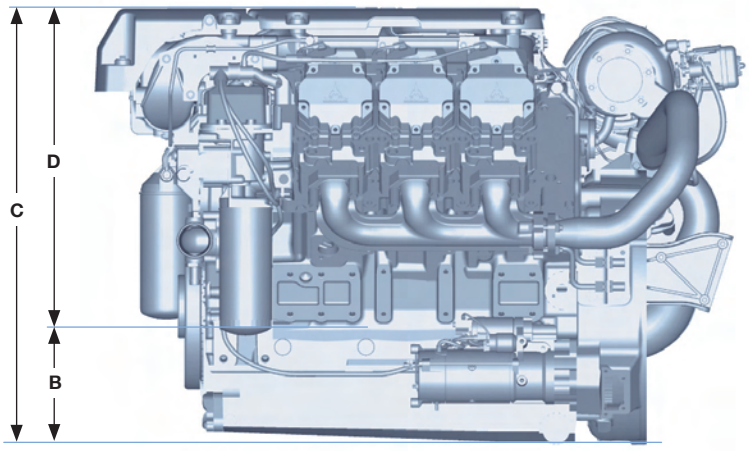


TCD 12.0 / TCD 16.0 – Flat Engine

Dimensions		A	B	C	D	E	F	G
TCD 12.0 V6	mm | in	843* | 33.2	460 | 18.1	1168* | 46.0	690 | 27.2	945 | 37.2	143 | 5.6	297 | 11.7
TCD 16.0 V8	mm | in	1064 | 41.9	460 | 18.1	1196 | 47.1	734 | 28.9	945 | 37.2	143 | 5.6	331 | 13.0

* Dimensions for engine without cover plate; cover plate available for TCD 12.0 V6





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 regulations on exhaust emissions according to EU Stage III B and 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.

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 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 NOX emissions. This is the standard technology we implement for our TCD 12.0 and 16.0 engines complying with the EU exhaust emission Stage III B and the US EPA Tier 4 interim.

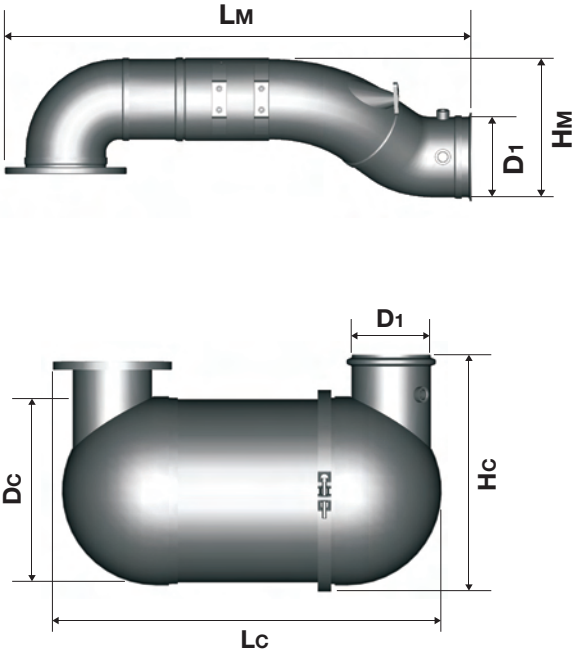
Operation mode of the SCR-System
A 35 % water-based urea solution is injected into the engine exhaust. The ammonia formed in the SCR catalytic converter reduces the nitrogen oxide (NO_X) in the exhaust. The amount of urea solution injected depends on the amount of nitrogen oxide currently present and thus the respective load and rpm. The urea consumption thus depends on the collective engine load and can be up to 8 % of the engine fuel consumption.

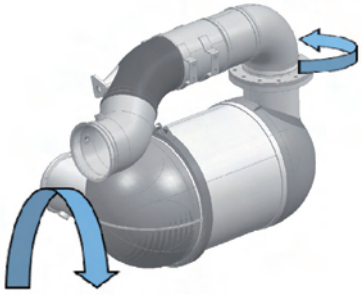
Higher performance and dynamics – lower fuel consumption
The customer benefits from using the SCR method in the TCD 12.0 and 16.0 engines is that the engine cooler size remains at Tier 3 levels, the lubricating oil change interval is extended and the fuel consumption is reduced. The SCR process, in conjunction with optimized injection and combustion technology, makes it possible to reduce particulate emission limits solely with the help of engine modifications.

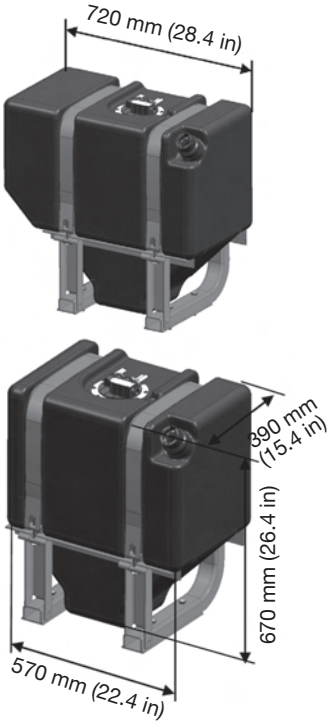
DVERT® – solutions for the future
Only after exhaust emission Stage EU IV / US EPA Tier 4 takes effect, it will be necessary to equip engines of this series with an additional particulate filter system, another DVERT® module already available today.

Dimensions		DC	D1	LC	LM	HC	HM	Urea Tank Volume
TCD 12.0 V6	mm | in	354 | 13.9	152.4 | 6.0	760 | 29.9	885 | 34.9	455 | 17.9	275 | 10.8	85 l | 22.4 gal
TCD 16.0 V8	mm | in	354 | 13.9	152.4 | 6.0	860 | 33.9	885 | 34.9	455 | 17.0	275 | 10.8	105 l | 27.6 gal

Further system components: Dosing unit, supply module, heated hoses







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