



# TCD 2015

**Engine For Agricultural Equipment**

**300–520 kW | 402–697 hp at 2100 min<sup>-1</sup> | 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 and US EPA Tier 4 interim. These emission standards will require considerable reductions in particulate matter and NO<sub>x</sub> 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<sub>x</sub> emissions of our 2015-series engines, beginning with exhaust emission stages III B and EPA Tier 4 interim.

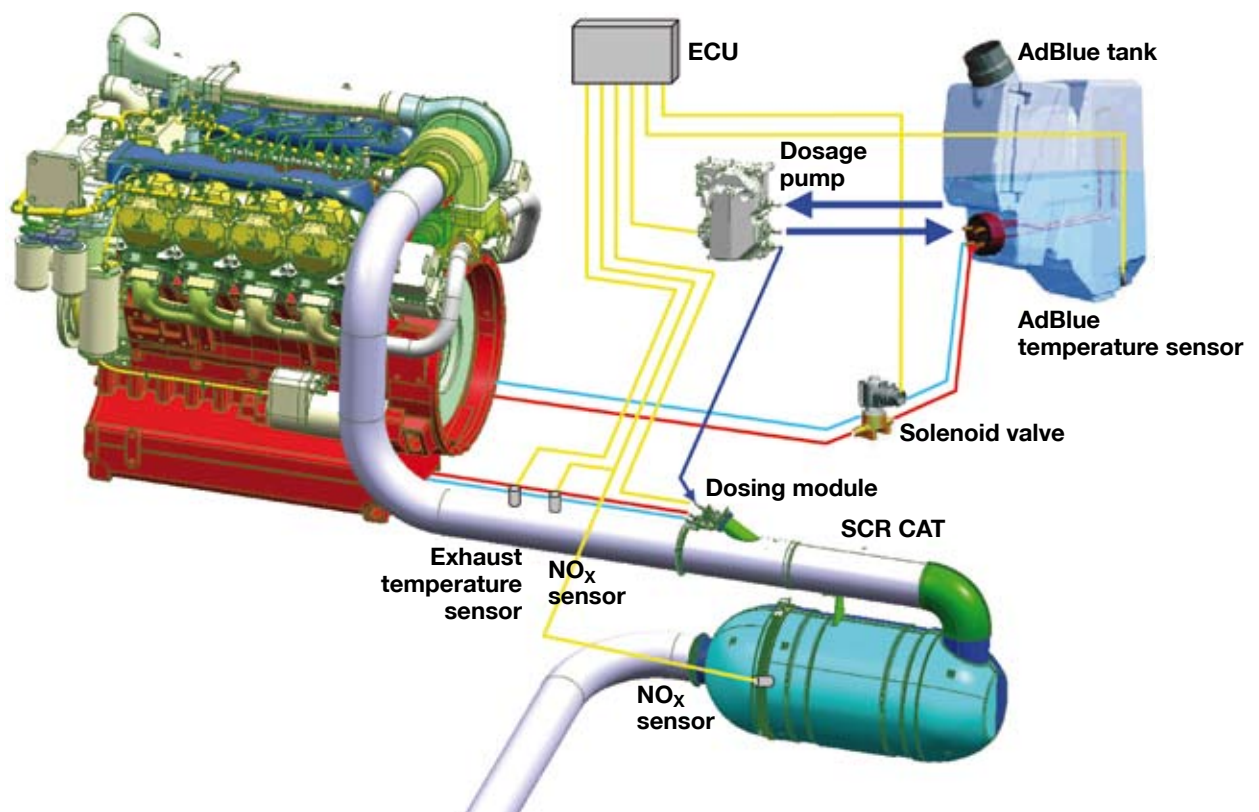
This method does not directly use the ammonia necessary for the selective catalytic reaction but instead injects it as a 35% water-based urea solution into the engine exhaust where the chemical reaction produces ammonia (NH<sub>3</sub>) and carbon dioxide (CO<sub>2</sub>). At the corresponding temperature, the ammonia formed in the SCR catalytic converter reacts with and reduces the nitrogen oxide (NO<sub>x</sub>) 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 2015-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<sub>x</sub> technology.



# Characteristics

Modern liquid-cooled V6 and V8 cylinder, 90° engines | Optimized turbocharging with electronic control and intercooling | Four-valve technology | Exceptionally compact, powerful, and with a high power density | Electronic CR injection system (2000 bar) | Proven technology equipped with acoustically optimized components

## Your Benefits

- Using proven technology with a high power density results in high equipment performance, availability, and dependability.
- The modern injection system ensures low fuel consumption and highly economical operation.
- Low noise emissions, running smoothness, and endurance are the result of tried and tested technology.
- The space-saving design of the compact 2015 engine reduces installation costs.
- The 2015 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

<b>Type of cooling:</b>	Liquid cooling system
<b>Crankcase:</b>	Gray cast iron crankcase with wet cylinder sleeves
<b>Crankcase breather:</b>	Vacuum-controlled, closed-circuit system
<b>Cylinder head:</b>	Individual cross-flow cylinder heads made of gray cast iron
<b>Valve arrangement/ timing:</b>	Overhead in the cylinder head, four valves per cylinder, actuated by tappets, pushrods, and rockers. Control is driven by gears and a central camshaft.
<b>Turbocharging:</b>	Turbocharger and intercooler
<b>Pistons:</b>	Three-ring pistons
<b>Piston cooling:</b>	Injected cooling oil. Cooling channel pistons with additional piston bottom cooling
<b>Connecting rod:</b>	Drop-forged steel rod with trapezoidal piston pin boss
<b>Crankshaft:</b>	Drop-forged steel rod with bolted counterweights
<b>Crankshaft and big-end bearings:</b>	Tri-metal friction bearings / sputter bearings
<b>Camshaft:</b>	Steel camshaft
<b>Lubrication:</b>	Forced-feed lubrication with gear pump
<b>Lubricating oil cooler:</b>	Integrated
<b>Lubricating oil filter:</b>	Replaceable paper microfilter cartridge in main lubricating oil flow
<b>Fuel injection system:</b>	BOSCH CR System (2000 bar) with in-line piston pump (2 plungers) with electronic control
<b>Fuel feed pump:</b>	Mechanical gear pump
<b>Injector:</b>	Centered, 8-hole injection nozzle
<b>Fuel filter:</b>	Replaceable cartridge
<b>Alternator:</b>	Three-phase alternator 28 V, 55 A, 80 A, 110 A
<b>Starter:</b>	24 V / 5.5 kW, 6.5 kW
<b>Heating system:</b>	Optional connection to engine cooling circuit for cab heating

# Technical Data

Engine model		TCD 2015 V6	TCD 2015 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 <sup>-1</sup>   rpm	1800–2100	1800–2100
Minimum idle speed	min <sup>-1</sup>   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 for mobile construction machines <sup>1)</sup>		TCD 2015 V6	TCD 2015 V8
Power output acc. to ISO 14296	kW   hp	390   524	520   697
at engine speed	min <sup>-1</sup>   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 <sup>-1</sup>   rpm	1300	1400
Specific fuel consumption <sup>2)</sup>	g/kWh   lb/hp-hr	211   0.347	212   0.348
Weight acc. to DIN 70020, Part 7A <sup>3)</sup>	kg   lb	985   2171.55	1180   2601.45

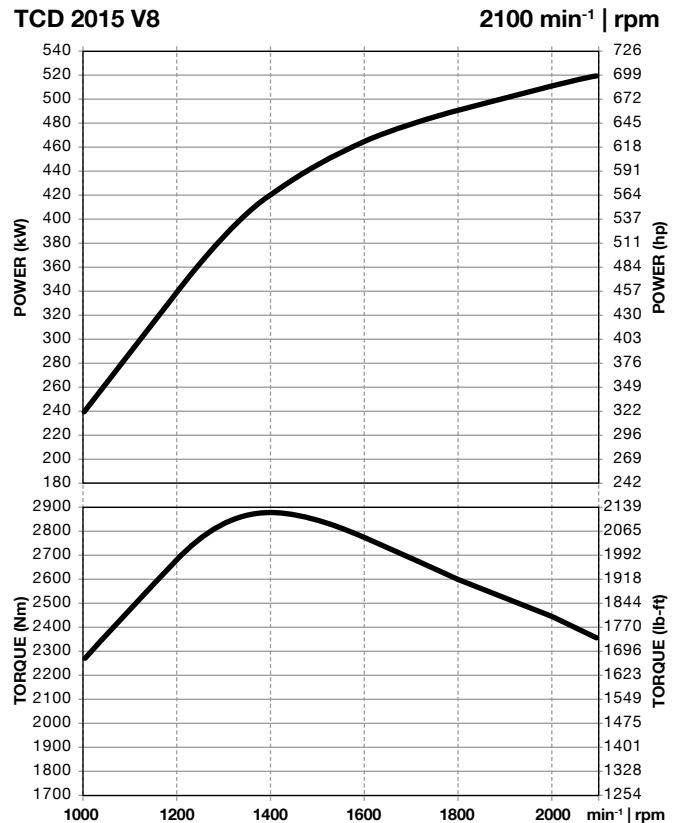
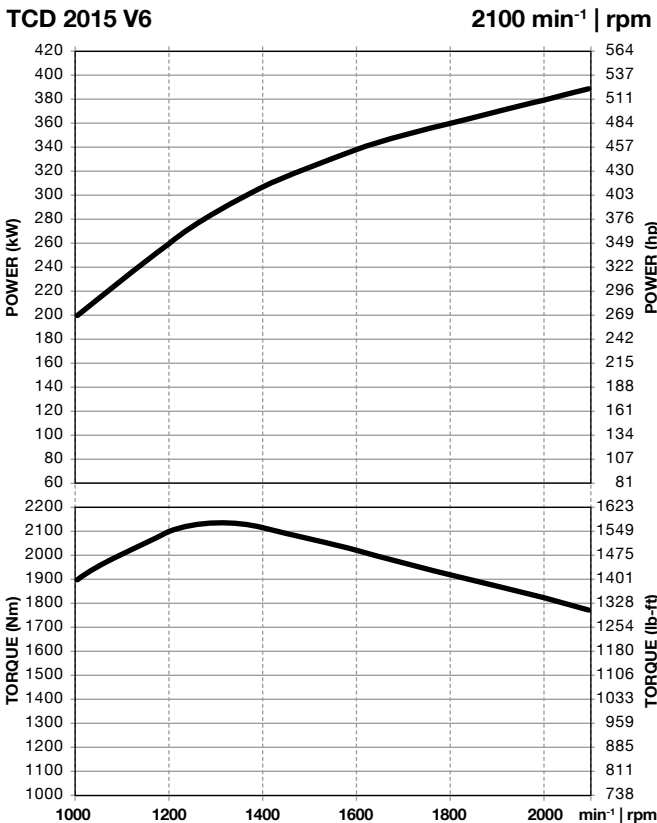
1) Power ratings without cooling system

2) At WOT consumption without cooling system, based on diesel fuel with a density of 0.835 kg/dm<sup>3</sup> at 15 °C.

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

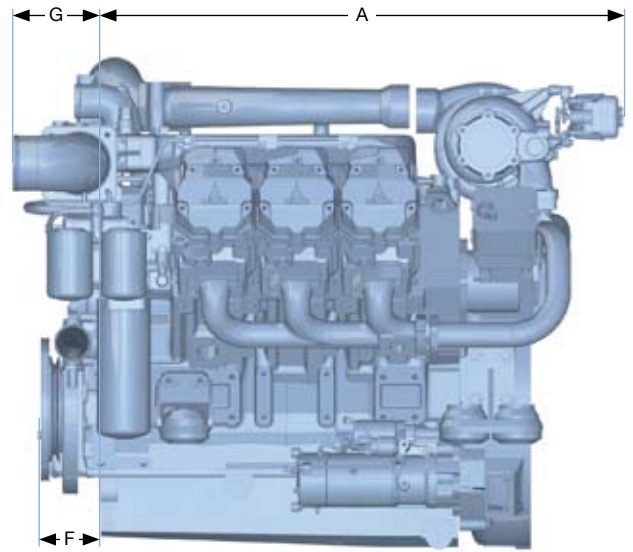
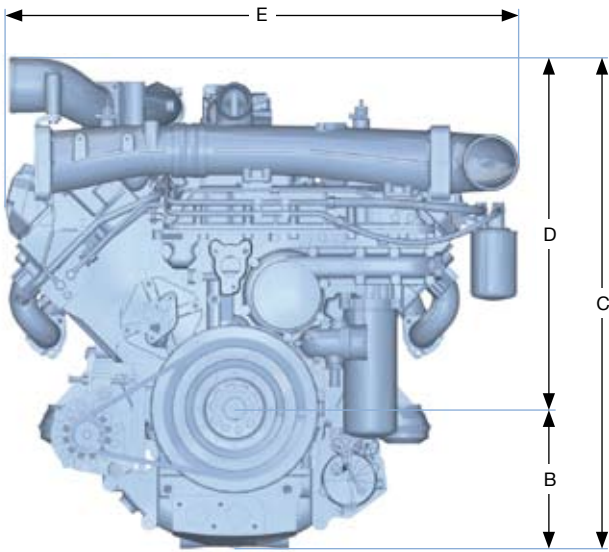
The figures indicated in this datasheet are for informational purposes only and are not binding. The specifications in the quote are determinative.

## Standard Engines



# TCD 2015 CR – Standard Engine

Dimensions		A	B	C	D	E	F	G
TCD 2015 CR V6	mm   in	850   33.5	460   18.1	1160   45.7	700   27.6	930   36.6	143   5.6	255   10.0
TCD 2015 CR V8	mm   in	1045   41.1	465   18.3	1185   46.7	720   28.4	930   36.6	143   5.6	230   9.1



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