



TCD 3.6

Engine for Industrial Applications

50-90 kW | 67-120 hp at 2600 and 2300 min⁻¹ | rpm

EU Stage III B / US EPA Tier 4 interim

The engine company.



Characteristics

4 cylinder in-line engines turbo charged, with or without charge air cooling | Water-cooled | Compact engine design | Advanced fuel injection and combustion system | External cooled exhaust gas recirculation | Full line customized options | Excellent cold starting ability for extreme climatic conditions | Full power at flywheel end for axial or radial drives | Two optional PTO's from gear end cover | In compliance to non-road emission standards EU Stage III B and US EPA Tier 4 interim

Your Benefits

- Compact 4 cylinder engine with high specific power and torque, a market leader in engine performance, specially designed for short and narrow machine installations.
- The modern common rail fuel injection system, the front gear drive and optional balancer shafts guarantee low noise, low vibration and smooth engine operation under all load conditions.
- Engine variant, without aftertreatment but with otherwise identical installations parameters, providing flexibility for export markets with lower emission requirements.
- Low fuel consumption via high pressure Common Rail System, 500 hr oil change interval and the maintenance free valve train provide durable productivity and life long low operating cost.
- The extensive network of DEUTZ distributors and dealers providing excellent technical backup and enviable global brand presence.
- An exhaust aftertreatment system tailored to meet all the requirements of Industrial Equipment and offer the opportunity of compact installation through the flexibility of loose or engine mounted options.
The DVERT® 'wall flow' high efficiency system with active regeneration is suitable for all equipment applications with a minimum ash servicing period of 3000 hours.
The DVERT® 'through flow' system offers the eligible feature of service free operation throughout the engine design life.
Our modular design provides the benefits of competitive cost and robust compliant solutions for all applications, duty cycles and markets.
- Low fuel consumption, recyclable components and fluid change friendly systems, designed to protect the environment.

Engine Specifications

Cylinder:	4 cylinder in-line
Cooling system:	Water-cooled, belt driven water pump, with integrated, thermostat controlled bypass
Crankcase:	Ribbed, thin-wall grey cast iron, noise-optimised
Crankcase breather:	Closed-circuit system
Cylinder head:	Cast iron cross flow cylinder head with separate aluminium inlet manifold
Valve train:	Overhead valves in cylinder head, two valve per cylinder, actuated via rocker arms, push rods and hydraulic tappets, driven by low-noise straight cut gears and camshaft.
Charging:	Wastegate turbo charger and air-to-air charge cooling version
Piston:	3-ring piston with oil jet cooling
Connecting rod:	Drop-forged steel rod, fracture split
Crankshaft:	Casted, high grade SG iron with cast-on counterweights, fillet-rolled, bi-metal shell bearings
Camshaft:	Chilled cast iron
Lubrication system:	Gear driven rotor pump, integrated oil cooler with spin-on cartridge filter
Fuel injection system:	High pressure Common Rail, electronically controlled
Fuel filter:	Replaceable cartridge main filter and a pre-filter with water trap
Fuel lift pump:	Electrical pump
Alternator:	Three-phase alternator, 14 V / 55 - 120 A (depending on application)
Starter motor:	12 V / 2.6 - 4 kW (depending on applications)
Options:	Intake manifold connections, exhaust manifolds connections, hydraulic pumps drives, mass balancing shafts, engine mounts, multi oil pan drains, dipsticks, SAE flywheel housings, flywheels, oil filter position horizontal, vertical and remote, oil filler in cylinder head cover and low level fill on side of crankcase, electrics 12 V and 24 V

Technical Data

Engine model		T(C)D 3.6 L4	TCD 3.6 L4	TCD 3.6 L4
Number of cylinders		4	4	4
Bore/stroke	mm in	98/120 3.86/4.72	98/120 3.86/4.72	98/120 3.86/4.72
Displacement	l cu in	3.62 221	3.62 221	3.62 221
Compression ratio		18 : 1	18 : 1	18 : 1
Rated speed	min ⁻¹ rpm	2600	2600	2300
Mean piston speed	m/s ft-m	10.4 2045	10.4 2045	9.2 1809

EU Stage III B / US EPA Tier 4 interim

Power ratings ¹⁾		T(C)D 3.6 L4	TCD 3.6 L4	TCD 3.6 L4
Power acc. to ISO 14396	kW hp	55.4 74	75 100	90 120
at engine speed	min ⁻¹ rpm	2600	2600	2300
Mean effective pressure	bar psi	7.06 115.74	10.84 177.67	12.97 198.56
Max. torque	Nm ft-lb	330 244	390 288	480 354
at engine speed	min ⁻¹ rpm	1600	1600	1600
Minimum idle speed	min ⁻¹ rpm	900	900	900
Specific fuel consumption ²⁾	g/kWh lb/hph	220 0.36	210 0.34	210 0.34
Weight acc. to DIN 70020, Part 7A ³⁾	kg lbs	270 595 ³⁾	270 595 ³⁾	270 595 ³⁾

1) Power ratings at flywheel gross, without cooling system.

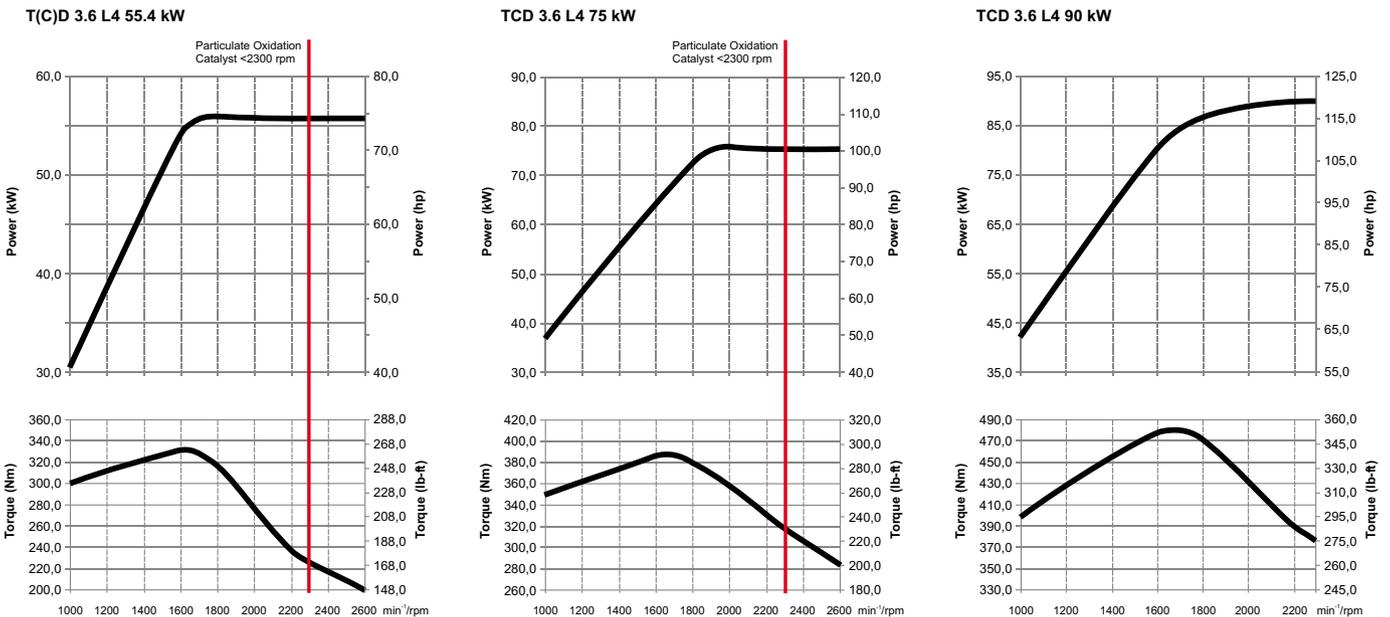
2) At optimal operating point. Specific fuel consumption based on diesel fuel with a specific gravity of 0.835 kg/dm³ at 15 °C (6.96 lb/US gallon at 60 °F).

3) Not including starter motor/alternator, radiator and operating fluids but including flywheel and flywheel housing.

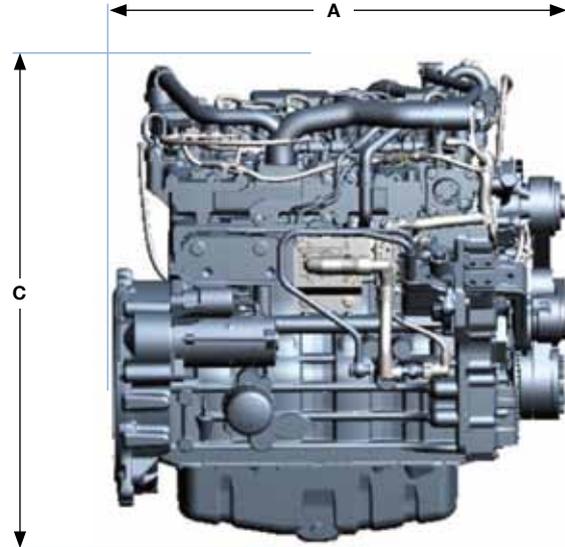
The values given in this data sheet are for information purposes only and not binding.

The information given in the offer is decisive.

Standard Engines



Dimensions		A	B	C
TD 3.6 L4	mm in	716 28.2	595 23.4	792 31.2
TCD 3.6 L4	mm in	716 28.2	595 23.4	792 31.2



Dimensions		D	L	DVERT® Systems			
				DOC only	,Through Flow'	,Wall Flow'	
TD 3.6	< 56 kW	mm in	190 7.5	400 15.7		■	■
TCD 3.6	< 56 kW	mm in	190 7.5	590 23.2	■		■
TCD 3.6	< 90 kW	mm in	190 7.5	600 23.6		■	■

DVERT® ,through flow' system is not suitable for some specific market legislations. For more information please contact DEUTZ AG, Cologne, or responsible regional sales organisation. All connection variants are available in either 0° or 90° positions of both intake and outlet flanges.



These illustrative pictures showing the scale of EAT systems vs engine are for information purposes only and not binding. The final design will be published via DEUTZ technical documentation systems.

Tier 4 – our driving force, your advantage.

Starting January 2012, diesel engines of mobile construction machines with power classes ranging from 56 to < 130 kW have to 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 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 those requirements while maintaining the performance of our engines, which include high fuel economy, dependability, and long life.

The DVERT® Oxidation Catalyst (DOC) only or combined with an open DVERT® ‚through flow‘ module is one of the technologies we implement for the 3.6 engine series below 56 kW complying with the EU exhaust emission Stage III B and the US EPA Tier 4 for many applications.

For more challenging applications and load profiles DEUTZ also offers the possibility to use a DOC and closed DVERT® ‚wall flow‘ system with throttle regeneration.

Operation mode and Regeneration of the Diesel Particulate Filter

The DVERT® Oxidation Catalyst (DOC) initially oxidizes gaseous pollutants such as HC, CO, and NO.

Soot particulates are then captured in an enclosed DVERT® particulate system installed after the catalyst. The DVERT® Particulate module (through or wall flow) via a temperature dependant continuous catalytic reaction burns off the deposits. In these types of system regeneration is possible for virtually all load patterns and represents by far the most cost-effective solution.

In addition the wall flow system offers active regeneration by means of an electronically controlled intake air throttle to achieve the required temperature level for the regeneration in the case of low exhaust temperatures.

DVERT® – solutions for the future

Only after exhaust emission Stage EU IV / US EPA Tier 4 take effect, it will be necessary to equip engines of this series over 56 kW with an additional SCR system, another DVERT® module already available today.

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