

SCANIA INDUSTRIAL ENGINE: EU STAGE V

# 9-LITRE ENGINE



## Engine description

### DC09 311A. 202 kW

Engine speed	1,800 rpm
Emission compliance	EU Stage V
Rating	ICFN
No of cylinders	5 in-line
Working principle	4-stroke
Displacement	9.3 litres
Weight	950 kg (excluding oil and coolant)
Oil capacity	31-36 litres (standard oil sump)
Electrical system	1-pole 24 V

Scania's industrial engines for emission level EU Stage V are based on a robust design for superior operating economy and reliability. With their modular design, the engines offer easy installation for the producer of the equipment as well as easy access to daily checks and service for the operator. The engines can be fitted with many accessories such as air cleaners, PTOs, exhaust fittings and flywheels, to suit a variety of installations.

Scania's Stage V engines are equipped with a Scania developed extra high pressure fuel injection system based on common rail technology, and a turbocharger optimized for operation in combination with the exhaust gas aftertreatment system. Together with Scania's Engine Management System, the result is an engine that fulfils the strictest exhaust emission requirements, with low fuel consumption and a high torque.

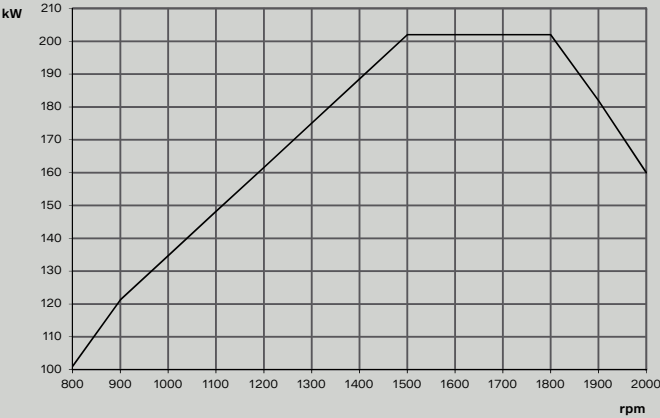
#### Standard equipment

- Scania Engine Management System, EMS
- Extra high pressure fuel injection system, XPI
- Variable Geometry Turbocharger
- Saver ring in cylinder liner
- Fuel filter and extra pre-filter with water separator
- Thermal recirculation fuel heater
- Oil filter, full flow
- Centrifugal oil cleaner
- Oil cooler, integrated in cylinder block
- Oil filler, in cylinder block
- Deep front oil sump
- Oil dipstick, in cylinder block
- Magnetic drain plug for oil draining
- Starter motor, 1-pole 6.0 kW
- Alternator, 1-pole 100 A
- Flywheel, for use with friction clutch
- Silumin flywheel housing, SAE 1 flange
- Front-mounted engine brackets
- Particulate filter and SCR in 2-unit distributed aftertreatment system
- Open crankcase ventilation

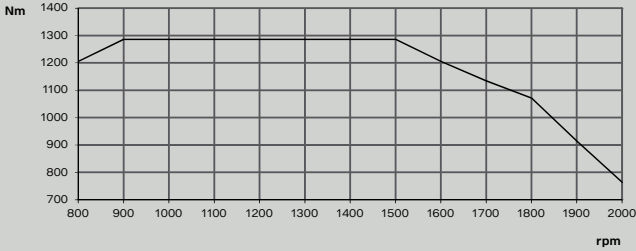
**ICFN - Continuous service:** Rated output available 1/1 h. Unlimited h/year service time at a load factor of 100%.

# Power charts

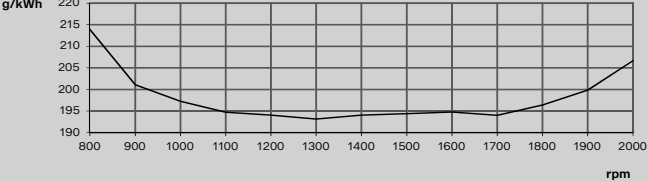
Power



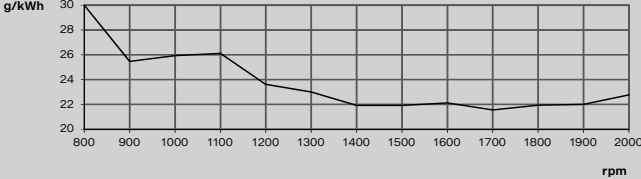
Torque



Fuel consumption



Reductant consumption

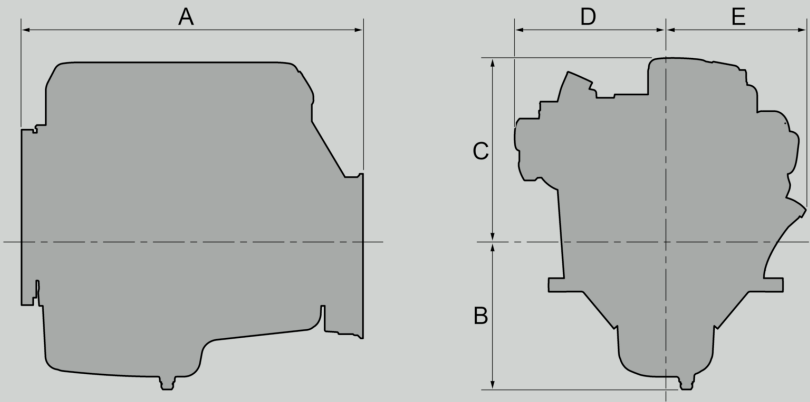


**Test conditions.** Air temperature +25 °C. Barometric pressure 100 kPa (750 mmHg). Humidity 30%. Diesel fuel acc.to ECE R 24 Annex 6. Density of fuel 0,840 kg/dm<sup>3</sup>. Viscosity of fuel 3.0 cSt at 40 °C. Energy value 42,700 kJ/kg. **Power test code** ISO 3046. Power and fuel values +/-3%.

## Dimensions

A Overall length	1,214
B Centre of crankshaft to bottom	448
C Centre of crankshaft to top	665
D Centre of crankshaft to right-hand side	510
E Centre of crankshaft to left-hand side	472

All dimensions indicated in mm

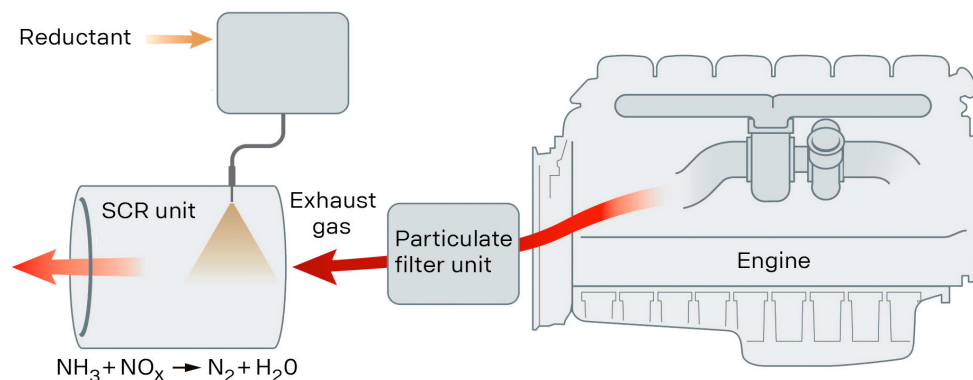


## Technical data

	Engine speed (rpm)			
	1,200	1,500	1,800	2,000
Gross power (kW)	162	202	202	160
Gross power (hp, metric)	220	275	275	218
Gross torque (Nm)	1,286	1,286	1,072	764
Fuel consumption at full load (g/kWh)	194	194	196	207
Reductant consumption at full load (g/kWh)	24	22	22	23
Heat rejection to coolant (kW)	64	80	80	63

## EMISSION COMPLIANCE EU STAGE V

# EXHAUST GAS AFTERTREATMENT SYSTEM



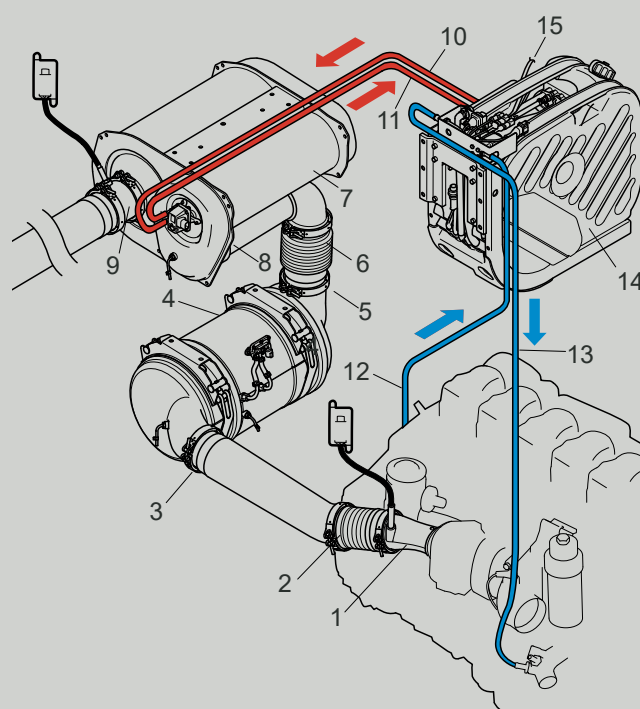
The emissions of particulate matter are filtered through a ceramic structure, that only allows particles smaller than a defined size to pass. When the filter is filled with soot particles to a specific amount, it is regenerated automatically.

SCR technology: A chemical process is started when reductant, a urea and water mixture, is injected into the exhaust gas stream. During injection, the water evaporates, and the urea breaks down to form ammonia. The ammonia then reacts with the nitrogen oxide gases in the catalytic converter and forms harmless products such as nitrogen gas and water.

SCR (Selective Catalytic Reduction) technology, in combination with a particulate filter and an oxidation catalytic converter (integrated in the particulate filter unit), is used on Scania's EU Stage V engines to reduce the NOx and particle content in the exhaust gases in the best possible way.

## Mechanical system

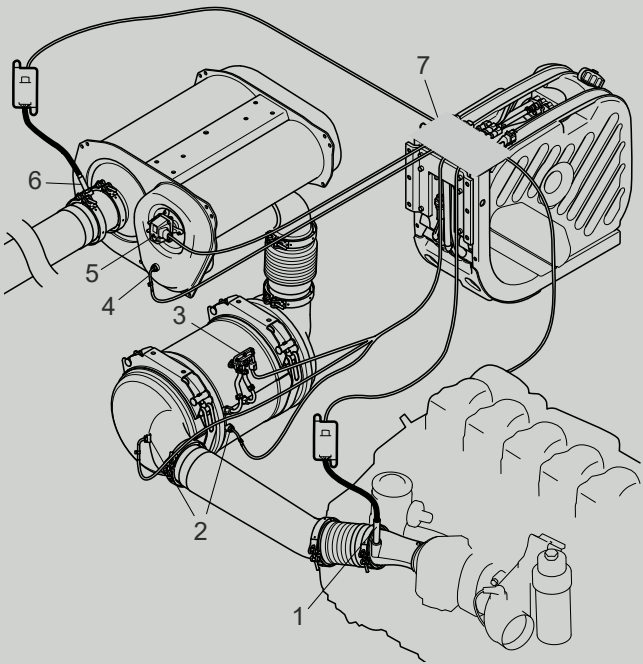
	Standard	Optional
1 Exhaust bend	20° bend	90° bend, exhaust brake
2 Exhaust bellows	-	√
3 Exhaust flange	-	Ø114, 130, 155 mm
4 Particulate filter unit	with 90° outlet	with straight outlet
5 Exhaust flange	-	Ø114, 130, 155 mm
6 Exhaust bellows SCR	-	√
7 SCR unit	without outlet bend	with 90° outlet bend
8 Exhaust flange	-	Ø114, 130, 155 mm
9 NOx flange from SCR unit	Ø127 mm, V-clamp	Ø114, 130, 155 mm
10 Reductant pressure hose	2.5 m	4.0 m, 5.0 m, 6.5 m
11 Reductant return hose	2.5 m	4.0 m, 5.0 m, 6.5 m
12 Coolant hose for heating of tank and pump	-	-
13 Coolant return hose	-	-
14 Reductant tank	38 l	45 l, 60 l, 63 l, 70 l
15 Reductant tank bleed hose	0.8 m	3.3 m



# Electrical system

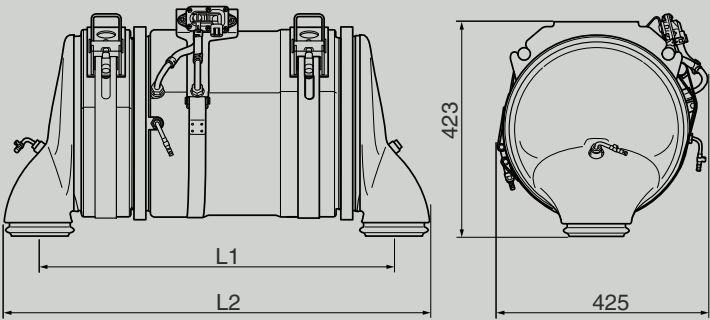
- 1 NOx sensor upstream with control unit
- 2 Exhaust gas temperature sensors on particulate filter unit
- 3 Differential pressure sensor
- 4 Exhaust gas temperature sensor on SCR unit
- 5 Reductant doser
- 6 NOx sensor downstream with control unit
- 7 Electrical interface to exhaust gas aftertreatment system

All components are standard equipment. Standard cable length 3.0 m, optional length 4.5 m, 6 m (9 m).



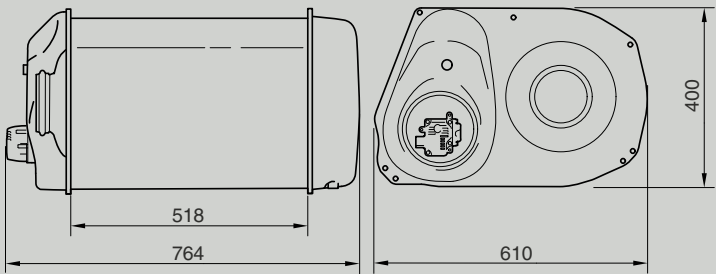
# Particulate filter unit

Engine	L1	L2	Weight
DC09	603 mm	747 mm	27 kg
DC13	679 mm	823 mm	31 kg



# SCR unit

Weight: 65 kg



# Reductant tank, 38 litres

Available sizes	Total volume	Filling volume
38 litres	50 litres	38 litres
45 litres	60 litres	45 litres
60 litres	75 litres	60 litres
63 litres	80 litres	63 litres
70 litres	90 litres	70 litres

